

=> FIL REG

FILE 'REGISTRY' ENTERED AT 12:45:25 ON 31 AUG 2011  
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=> D HIS NOFILE

FILE 'HCA' ENTERED AT 12:10:03 ON 31 AUG 2011  
E US2006-594654/APPS  
L1 1 SEA SPE=ON ABB=ON PLU=ON US2006-594654/AP  
E GB2004-6841/APPS  
L2 1 SEA SPE=ON ABB=ON PLU=ON GB2004-6841/PRN  
E WO2005-GB1159/APPS  
L3 1 SEA SPE=ON ABB=ON PLU=ON (WO2005-GB1159/AP OR WO2005-GB1159/  
PRN)  
L4 1 SEA SPE=ON ABB=ON PLU=ON (L1 OR L2 OR L3)  
SEL L4 RN  
  
FILE 'REGISTRY' ENTERED AT 12:10:54 ON 31 AUG 2011  
L5 16 SEA SPE=ON ABB=ON PLU=ON (12597-69-2/BI OR 1303-00-0/BI OR  
  
FILE 'HCA' ENTERED AT 12:12:04 ON 31 AUG 2011  
SEL L4 AU  
L6 88 SEA SPE=ON ABB=ON PLU=ON ("BUCK, MANFRED"/AU OR "CYGANIK,  
PIOTR"/AU)  
E THE UNIVERSITY COURT/CO  
L7 3320 SEA SPE=ON ABB=ON PLU=ON "THE UNIVERSITY COURT OF THE  
UNIVERSITY OF ST ANDREWS"+ALL/CO,CS,PA  
L8 QUE SPE=ON ABB=ON PLU=ON (SUBSTRAT? OR SURFACE? OR BASE# OR  
SUBSTRUCT? OR UNDERSTRUCT? OR UNDERLAY? OR FOUNDATION? OR  
PANE? OR DISK? OR DISC# OR WAFER?)  
L9 QUE SPE=ON ABB=ON PLU=ON (HEAT? OR WARM? OR HOT# OR  
CALEFACT? OR TORREFACT? OR PYROL? OR SINTER? OR CALCIN? OR  
AUTOCLAV? OR THERMOL? OR THERMAL? OR TEPEFACT? OR PREHEAT? OR  
MELT? OR FUSE# OR FUSING# OR FUSION?)  
L10 QUE SPE=ON ABB=ON PLU=ON SAM OR SELF (5A) ASSEMB? (5A)  
(MONOLAY? OR MONO (2A) LAY?)  
L11 QUE SPE=ON ABB=ON PLU=ON ARYL# OR AROM? OR ?CYCL? OR RING?  
L12 QUE SPE=ON ABB=ON PLU=ON ?LITHO?  
L13 1988802 SEA SPE=ON ABB=ON PLU=ON L8 AND L9  
L14 2179 SEA SPE=ON ABB=ON PLU=ON L13 AND L10  
L15 QUE SPE=ON ABB=ON PLU=ON ARYL# OR AROM? OR CYCL? OR RING?  
L16 366 SEA SPE=ON ABB=ON PLU=ON L14 AND L15  
L17 27 SEA SPE=ON ABB=ON PLU=ON L16 AND L12  
E SELF-ASSEMBLED MONOLAYERS/CT  
L18 14705 SEA SPE=ON ABB=ON PLU=ON "SELF-ASSEMBLED MONOLAYERS"+PFT/CT  
L19 195 SEA SPE=ON ABB=ON PLU=ON L16 AND L18  
L20 18 SEA SPE=ON ABB=ON PLU=ON L17 AND L18  
L21 QUE SPE=ON ABB=ON PLU=ON SURFACE?/SC,SX  
L22 98 SEA SPE=ON ABB=ON PLU=ON L19 AND L21  
L23 5 SEA SPE=ON ABB=ON PLU=ON L20 AND L21  
E LITHOGRAPHY/CT  
L24 34469 SEA SPE=ON ABB=ON PLU=ON LITHOGRAPHY+PFT/CT  
L25 12 SEA SPE=ON ABB=ON PLU=ON L16 AND (L18 AND L24)  
L26 120 SEA SPE=ON ABB=ON PLU=ON L17 OR L22 OR L23 OR L25  
L27 1 SEA SPE=ON ABB=ON PLU=ON L26 AND (L6 OR L7)  
L28 119 SEA SPE=ON ABB=ON PLU=ON L26 NOT L27  
L29 62 SEA SPE=ON ABB=ON PLU=ON 1802-2006/PY,PRY,AY AND L28

August 31, 2011

10/594,654

2

L30 QUE SPE=ON ABB=ON PLU=ON 3/SC,SX  
 L31 60 SEA SPE=ON ABB=ON PLU=ON L29 NOT L30

=&gt; FIL HCA

FILE 'HCA' ENTERED AT 12:45:32 ON 31 AUG 2011

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=&gt; D L27 1 IBIB ABS HITSTR HITIND RETABLE

L27 ANSWER 1 OF 1 HCA COPYRIGHT 2011 ACS on STN

ACCESSION NUMBER: 143:374060 HCA Full-text

TITLE: Patterning by thermal treatment of  
 self-assembled monolayer  
 anchored on substrate surface

INVENTOR(S): Buck, Manfred; Cyganik, Piotr

PATENT ASSIGNEE(S): The University Court of the University of St.  
 Andrews, UK

SOURCE: PCT Int. Appl., 24 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005092516	A1	20051006	WO 2005-GB1159	20050324
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
GB 2426724	A	20061206	GB 2006-18673	20050324
GB 2426724	B	20080903		
US 20070140901	A1	20070621	US 2006-594654	20060926
PRIORITY APPLN. INFO.:			GB 2004-6841	A 20040326
			WO 2005-GB1159	W 20050324

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention provides a process for producing a surface -modified layer system comprising a substrate and a self -assembled monolayer (SAM) anchored to its surface. The SAM is comprised by aryl or rigid alicyclic moiety species. The process comprises providing a polymorphic SAM anchored to the substrate, e.g., a conductor or semiconductor metal or compound, and thermally treating the SAM to change from a first to a second structural form thereof. The invention also provides a thermolithog. process in which the thermal treatment is used to transfer a pattern to the SAM, which is then developed. IPCI B05D0001-18 [ICM,7]; B05D0003-02 [ICS,7]  
 IPCR B05D0001-18 [I,C\*]; B05D0001-18 [I,A]; B05D0003-02 [I,C\*]; B05D0003-02

[I,A]; B05D0005-00 [N,C\*]; B05D0005-00 [N,A]  
 CC 66-3 (Surface Chemistry and Colloids)  
 Section cross-reference(s): 74, 76  
 ST self assembled monolayer substrate  
 surface thermal treatment patterning  
 IT Self-assembled monolayers  
 Surface phase transition  
 Surface structure  
 (patterning by thermal treatment of self-  
 assembled monolayer anchored on substrate  
 surface)  
 IT Lithography  
 (thermo-; patterning by thermal treatment of self-  
 assembled monolayer anchored on substrate  
 surface)  
 IT 298704-23-1  
 (SAM, gold bound; patterning by thermal treatment  
 of self-assembled monolayer anchored on  
 substrate surface)  
 IT 1303-00-0, Gallium arsenide, uses 7429-90-5, Aluminum, uses 7439-89-6,  
 Iron, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses  
 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7440-32-6, Titanium,  
 uses 7440-33-7, Tungsten, uses 7440-47-3, Chromium, uses 7440-57-5,  
 Gold, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses  
 12597-69-2, Steel, uses 22398-80-7, Indium phosphide, uses  
 (substrate; patterning by thermal treatment of  
 self-assembled monolayer anchored on  
 substrate surface)

## RETABLE

Referenced Author (RAU)	Year (RYP)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bension, R	1994			EP 0598361 A	HCA
Bocian, D	2003			US 2003081463 A1	
Effenberger, F	2003			US 2003035967 A1	HCA

=&gt; D L31 1-60 ALL

L31 ANSWER 1 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 148:133222 HCA Full-text

ED Entered STN: 31 Jan 2008

TI Novel metal nanoparticle with self assembled  
 monolayers of crosslinking agents for forming large-area films or  
 ultrafine patterns by printing

IN Park, Jong Jin; Kim, Sung Woong; Shin, Dong Woo; Park, Sang Hoon

PA Samsung Electronics Co., Ltd., S. Korea

SO U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DT Patent

LA English

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 38, 48, 66, 74

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20080003363	A1	20080103	US 2006-589783	20061031 <--
	KR 2008001567	A	20080103	KR 2006-75148	20060809 <--

August 31, 2011

10/594,654

4

PRAI KR 2006-58846	A	20060628	<--
KR 2006-75148	A	20060809	<--

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 20080003363	INCL	427256000; 427421100; 427372200
	IPCI	B05D0005-00 [I,A]; B05D0003-02 [I,A]; B05D0001-02 [I,A]
	IPCR	B05D0005-00 [I,A]; B05D0001-02 [I,A]; B05D0003-02 [I,A]
	NCL	427/256.000; 427/372.200; 427/421.100
	ECLA	H05K001/09D; B22F001/00A4; C03C017/00D2; C09D011/00C; L05D001:18C; L22F998:00+B22F1/00A2B4; M03C217:195; M03C217:420; M03C217:445; M03C217:479
KR 2008001567	IPCI	B82B0003-00 [I,A]
	IPCR	B82B0003-00 [I,A]

## ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OS MARPAT 148:133222

AB A printable metal nanoparticle having a self-assembled monolayer (SAM) composed of a compound containing a thiol (-SH), isocyanide (-CN), amino (-NH<sub>2</sub>), carboxylate (-COO) or phosphate group, as a linker, formed on the surface thereof, and a method for formation of a conductive pattern using the same are provided. The metal nanoparticles of an exemplary embodiment can be easily formed into a conductive film or pattern by a printing method, and the resulting film or pattern exhibits excellent conductivity which optimally may be adjusted if desired. Therefore, the resulting metal nanoparticles of can be used to advantage in the fields such as antistatic washable sticky mats, antistatic shoes, conductive polyurethane printer rollers, electromagnetic interference shielding materials, etc.

ST self assembled crosslinked metal nanoparticle conductor film patterning

IT Polyesters  
(aromatic; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)

IT Films  
(elec. conductive; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)

IT Electric conductors  
(films; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)

IT Polyethers  
(nitrile; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)

IT Conducting polymers  
Crosslinking agents  
Drying  
Electric conductors  
Electronic device fabrication  
Heat treatment  
Ink-jet printing  
Nanoparticles  
Printing (impact)  
Printing (nonimpact)  
Self-assembled monolayers  
(novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)

IT Amines  
Carboxylic acids

Isocyanides  
Phosphates  
Thiols  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Acrylic rubber  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Butyl rubber  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Epoxy resins  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Fluoropolymers  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Metals  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Nitrile rubber  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Phenolic resins  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Polyacetylenes  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Polyamides  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Polyanilines  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Polybenzimidazoles  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Polycarbodiimides  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Polycarbonates  
    (novel metal nanoparticle with self assembled  
    monolayers of crosslinking agents for forming large-area films  
    or ultrafine patterns by printing)

IT Polyesters  
    (novel metal nanoparticle with self assembled

- monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polymers
  - (novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polyoxypphenylenes
  - (novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polysiloxanes
  - (novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polythiophenylenes
  - (novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polyureas
  - (novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polyvinyl butyrals
  - (novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polyimides
  - (polyamide-; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polyimides
  - Polyketones
  - Polysulfones
    - (polyether-; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polyamides
  - Polyethers
    - (polyimide-; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polyethers
  - (polyketone-; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Acetals
  - (polymers; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Conducting polymers
  - (polypyrroles; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Polyethers
  - (polysulfone-; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT Conducting polymers
  - (polythiophenes; novel metal nanoparticle with self assembled monolayers of crosslinking agents for

- forming large-area films or ultrafine patterns by printing)
- IT 9010-85-9  
(butyl rubber; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT 7440-05-3P, Palladium, properties 7440-06-4P, Platinum, properties 7440-22-4P, Silver, properties 7440-50-8P, Copper, properties 7440-57-5P, Gold, properties  
(nanoparticles; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT 9003-18-3  
(nitrile rubber; novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT 68-12-2, Dimethylformamide, processes 14866-33-2, Tetraoctylammonium bromide 84540-57-8, Propylene glycol methyl ether acetate 88917-22-0, Dipropylene glycol methyl ether acetate  
(novel metal nanoparticle with self assembled monolayers of crosslinking agents for forming large-area films or ultrafine patterns by printing)
- IT 62-53-3, Aniline, uses 69-72-7, Salicylic acid, uses 86-55-5, 1-Naphthalenecarboxylic acid 92-67-1, 4-Aminobiphenyl 98-73-7, 4-tert-Butylbenzoic acid 101-02-0, Triphenyl phosphite 103-82-2, Phenylacetic acid, uses 104-47-2, (4-Methoxyphenyl)acetonitrile 112-37-8, Undecanoic acid 112-57-2, Tetraethylenepentamine 115-89-9, Diphenyl methyl phosphite 124-07-2, Octanoic acid, uses 140-29-4, Benzyl cyanide 149-91-7, Gallic acid, uses 326-62-5, 2-Fluorophenylacetonitrile 405-50-5, 4-Fluorophenylacetic acid 471-31-8, Hydrazinecarboxylic acid 554-95-0, 1,3,5-Benzenetricarboxylic acid 555-21-5, 4-Nitrophenylacetonitrile 589-16-2, 4-Ethylaniline 610-28-6, 2,5-Dinitrobenzoic acid 626-22-2, 1,3-Phenylenediacetonitrile 627-03-2, Ethoxycarboxylic acid 646-24-2, 1,9-Diaminononane 646-25-3, 1,10-Diaminodecane 706-03-6, 3-(Benzylamino)propionitrile 767-00-0, 4-Cyanophenol 768-94-5, 1-Adamantanamine 787-70-2, 4,4'-Biphenyldicarboxylic acid 929-57-7, 1,6-Diisocyanohexane 931-53-3, Cyclohexyl isocyanide 947-73-9, 9-Aminophenanthrene 1067-47-6, 4-(Triethoxysilyl)butyronitrile 1075-76-9, 3-Anilinopropionitrile 1136-89-6, 1-Naphthyl phosphite 1138-80-3, Carbobenzoyloxyglycine 1210-12-4, 9-Anthracenecarbonitrile 1460-16-8, Cycloheptanecarboxylic acid 1529-41-5, 3-Chlorobenzyl cyanide 1571-33-1, Phenylphosphonic acid 1638-86-4, Diethyl phenylphosphonite 1760-24-3, N-[3-(Trimethoxysilyl)propylethylendiamine 1779-48-2, Phenylphosphonic acid 1852-04-6, Undecanedioic acid 1947-00-8, 6-(Carbobenzoyloxylamino)caproic acid 1989-33-9, 9-Fluorene-carboxylic acid 2046-18-6, 4-Phenylbutyronitrile 2510-86-3, Ethyl phenyl phosphite 2768-31-2, Benzyl diethyl phosphite 2769-64-4, Butyl isocyanide 2783-17-7, 1,12-Diaminododecane 2856-63-5, 2-Chlorobenzyl cyanide 2920-38-9, 4-Biphenylcarbonitrile 2946-61-4, Dimethyl phenylphosphonite 3069-29-2, N-(2-Aminoethyl)-3-aminopropylmethyldimethoxysilane 3069-30-5, 4-Aminobutyltriethoxysilane 3544-25-0, 4-Aminobenzyl cyanide 3663-44-3, 3-Aminopropylmethyldimethoxysilane 3863-11-4, 3,4-Difluoroaniline 4420-74-0, 3-Mercaptopropyltrimethoxysilane 4712-55-4, Diphenyl phosphite 4942-47-6, 1-Adamantanecetic acid 5424-27-1, (4-Aminobenzyl)phosphonic acid 5581-75-9, 6-Phenylhexanoic acid 6373-50-8, 4-Cyclohexylaniline 7188-38-7, tert-Butyl isocyanide 7400-08-0, 4-Hydroxycinnamic acid 7447-39-4, Cupric chloride, uses 7498-57-9, 2-Naphthylacetonitrile 7761-88-8, Silver nitrate, uses 13621-47-1 13820-53-6, Disodium tetrachloropalladate 14191-95-8, 4-Hydroxybenzyl cyanide 14542-93-9, 1,1,3,3-Tetramethylbutyl

- isocyanide 14814-09-6, 3-Mercaptopropyltriethoxysilane 16225-26-6,  
 3,5-Di-tert-butylbenzoic acid 16903-35-8, Hydrogen tetrachloroaurate  
 16941-12-1, Dihydrogen hexachloroplatinate 17176-77-1, Dibenzyl  
 phosphite 17722-17-7, 4'-Chloro-2-cyanoacetanilide 18638-99-8,  
 3,4,5-Trimethoxybenzylamine 19472-74-3, 2-Bromophenylacetoneitrile  
 19694-02-1, 1-Pyrenecarboxylic acid 19812-93-2,  
 4'-Hydroxy-4-biphenylcarbonitrile 19924-43-7,  
 (3-Methoxyphenyl)acetoneitrile 22364-68-7, 2-Methylbenzyl cyanide  
 29138-97-4 31001-77-1, 3-Mercaptopropylmethyldimethoxysilane  
 34698-41-4, 1-Aminoindan 34967-24-3, 3,5-Dimethoxybenzylamine  
 35193-63-6, 1,1'-Binaphthyl-2,2'-diyl hydrogen phosphate 40665-68-7  
 40817-08-1, 4'-Pentyl-4-biphenylcarbonitrile 41122-70-7,  
 4'-Hexyl-4-biphenylcarbonitrile 51632-29-2, 3-Phenoxyphenylacetoneitrile  
 55161-63-2, Mercaptomethylmethyldiethoxysilane 58698-89-8,  
 3-(Triethoxysilyl)propylisothiocyanate 59649-56-8, 2,3-Diaminophenol  
 61540-35-0, Cyanomethyl N,N-dimethyldithiocarbamate 65463-54-9  
 70411-42-6, m-Aminophenyltrimethoxysilane  
 (novel metal nanoparticle with self assembled  
 monolayers of crosslinking agents for forming large-area films  
 or ultrafine patterns by printing)
- IT 16404-34-5P  
 (novel metal nanoparticle with self assembled  
 monolayers of crosslinking agents for forming large-area films  
 or ultrafine patterns by printing)
- IT 302-01-2, Hydrazine, uses 7722-84-1, Hydrogen peroxide, uses  
 16940-66-2, Sodium tetrahydroborate  
 (novel metal nanoparticle with self assembled  
 monolayers of crosslinking agents for forming large-area films  
 or ultrafine patterns by printing)
- IT 108-78-1D, Melamine, polymer 9002-84-0, Polyethylenetetrafluoride  
 9002-89-5, Polyvinyl alcohol 9003-17-2, Polybutadiene 9003-17-2D,  
 Polybutadiene, hydrogenated 9003-28-5, Polybutene 9003-31-0,  
 Polyisoprene 9003-31-0D, Polyisoprene, hydrogenated 9003-53-6,  
 Polystyrene 9003-55-8, Styrene-butadiene copolymer 9003-55-8D,  
 Styrene-butadiene copolymer, hydrogenated 9010-79-1, Ethylene-propylene  
 copolymer 9011-14-7, Polymethyl methacrylate 9016-80-2,  
 Polymethylpentene 9078-70-0, Polypentene 25014-12-4,  
 Polymethacrylamide 25067-58-7, Acetylene polymers 25068-01-3,  
 Ethylene-butadiene copolymer 25190-62-9, Poly(1,4-phenylene)  
 25212-74-2, Poly(thio-1,4-phenylene) 25233-34-5, Thiophene polymer  
 26009-24-5, Poly(1,4-phenylene-1,2-ethenediyl) 26009-24-5D,  
 Poly(1,4-phenylene-1,2-ethenediyl), alkoxy derivs. 36630-93-0  
 42441-75-8D, Heptadiene, homopolymers 91201-85-3, Polyisothianaphthene  
 104934-50-1, Poly(3-hexyl)thiophene 126213-51-2, PEDOT  
 (novel metal nanoparticle with self assembled  
 monolayers of crosslinking agents for forming large-area films  
 or ultrafine patterns by printing)
- L31 ANSWER 2 OF 60 HCA COPYRIGHT 2011 ACS ON STN  
 AN 146:345306 HCA Full-text  
 ED Entered STN: 12 Apr 2007  
 TI Chemical force microscopy for hot-embossing lithography  
 release layer characterization  
 AU Cameron, Neil S.; Ott, Arnaud; Roberge, Helene; Veres, Teodor  
 CS Industrial Materials Institute, National Research Council Canada,  
 Boucherville, QC, J4B 6Y4, Can.  
 SO Soft Matter (2006), 2(7), 553-557  
 CODEN: SMOABF; ISSN: 1744-683X  
 PB Royal Society of Chemistry  
 DT Journal



LA English  
 CC 66-5 (Surface Chemistry and Colloids)  
 AB The authors employed variable temperature chemical force microscopy (VT-CFM) using tips silanized with four different hydro- and hydrofluoroalkyl self-assembling monolayers (SAMs) interacting with a thin-film of poly(cyclic olefin), (PCO) to model the hot-embossing stamp-polymer interaction over a temperature range spanning the glass transition of the PCO.  
 ST hot embossing lithog release layer characterization  
 chem force microscopy; stamp polymer interaction hot embossing lithog chem force microscopy  
 IT Atomic force microscopy  
 Glass transition  
 Self-assembled monolayers  
 Simulation and Modeling  
 (chemical force microscopy for hot-embossing lithog. release layer characterization)  
 IT Lithography  
 (nanoimprint, hot embossing; chemical force microscopy for hot-embossing lithog. release layer characterization)  
 IT 5283-66-9, n-Octyltrichlorosilane 78560-44-8,  
 1,1,2,2-Tetrahydroperfluorodecyltrichlorosilane 78560-45-9,  
 1,1,2,2-Tetrahydroperfluorooctyltrichlorosilane 149838-19-7,  
 3-(Heptafluoroisopropoxy)propyltriethoxysilane 351376-50-6, Zeonor 750R  
 (chemical force microscopy for hot-embossing lithog. release layer characterization)  
 IT 7440-21-3, Silicon, properties  
 (wafer; chemical force microscopy for hot-embossing lithog. release layer characterization)  
 OSC.G 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)  
 UPOS.G Date last citing reference entered STN: 02 Aug 2010  
 OS.G CAPLUS 2010:906972; 2009:683721; 2008:178660; 2007:821529; 2006:1152863; 2006:639773  
 RE.CNT 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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L31 ANSWER 3 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 146:345233 HCA [Full-text](#)

ED Entered STN: 12 Apr 2007

TI Preparation and study of complex self-assembled film as a super-thin barrier on silver

AU Wang, Yihong; Song, Wei; Zhou, Jie; Ning, Gu; Wesche, K. D.

CS National Laboratory of Molecular and Biomolecular Electronics, Department of Chemistry and Chemical Engineering, Southeast University, Nanjing, 210096, Peop. Rep. China

SO Applied Surface Science (2006), 252(23), 8264-8269

CODEN: ASUSEE; ISSN: 0169-4332

PB Elsevier B.V.

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

AB A self-assembled monolayers (SAMs) of (3-mercaptopropyl)trimethoxysilane (3-MPT) chemisorbed on silver surface was chemical modified by 1-octadecanethiol (C18H37SH) (to form self-assembled mixed-monolayer (SMM)) and the co-polymer of N-vinylcarbazole and Me methacrylate ester to form complex self-assembled film (CSAF). The combinative state of interface between SAMs (or SMM) and co-polymer were characterized by dynamic mech. thermal anal. (DMTA). The thickness of film on Ag was characterized by XPS. Cyclic voltammetry (CV) measurements in 10% NaOH aqueous solution with the silver surface and covered with film indicated that 3-MPT SAMs modified with C18H37SH and then with co-polymer have higher capability against oxidation

ST silver complex self assembled monolayer

super thin barrier; mercaptopropyltrimethoxysilane complex self

assembled monolayer film silver barrier; octadecanethiol

complex self assembled monolayer film silver

barrier; Me methacrylate copolymer complex self assembled film silver

barrier; vinylcarbazole copolymer complex self assembled film silver barrier

IT Cyclic voltammetry

Self-assembled monolayers

Thickness

(preparation and study of complex self-assembled film as

super-thin barrier on silver)

IT Oxidation

(resistance to; preparation and study of complex self-assembled film as

super-thin barrier on silver)

IT Thermal analysis  
(thermomech.; preparation and study of complex self-assembled film as  
super-thin barrier on silver)

IT 2885-00-9, 1-Octadecanethiol 4420-74-0,  
(3-Mercaptopropyl)trimethoxysilane 7440-22-4, Silver, properties  
2/235-32-1, Methyl methacrylate-N-vinylcarbazole copolymer  
(preparation and study of complex self-assembled film as super-thin barrier  
on silver)

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

UPOS.G Date last citing reference entered STN: 09 Mar 2010

OS.G CAPLUS 2010:146139

RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L31 ANSWER 4 OF 60 HCA COPYRIGHT 2011 ACS ON STN

AN 146:192563 HCA Full-text

ED Entered STN: 22 Feb 2007

TI Thermal effect on the voltammogram of  
7-ferrocenecarbonyloxy-1-heptanethiol self-assembled  
monolayer

AU Rahman, M. M.; Jeon, I. C.

CS Laboratory of Interface and Surface Science, Department of Chemistry,  
Chonbuk National University, Chonbuk, 561-756, S. Korea

SO Journal of Organometallic Chemistry (2006), 691(26), 5648-5654  
CODEN: JORCAL; ISSN: 0022-328X

PB Elsevier Ltd.

DT Journal

LA English

CC 72-2 (Electrochemistry)  
Section cross-reference(s): 29, 66

AB The voltammetry of self-assembled monolayers (SAMs) of 7-ferrocenecarbonyloxy-  
1-heptanethiol (FcCO<sub>2</sub>(CH<sub>2</sub>)<sub>7</sub>SH) was studied as a function of temperature. Such  
SAMs are, when oxidized, susceptible to loss of ferrocene via nucleophilic  
attack, but at temps. only just above room temperature, there is an  
accelerated loss of ferrocene from the chain termini, an increase in the  
capacitance of the layer in its reduced state and a pos. shift in the E<sub>1/2</sub>  
value is observed. A comparison between these data and the effects of multiple

scans recorded at room temperature suggests that there is a reorientation, induced at slightly elevated temps., which is associated with the ferrocene ester linkage at the chain terminus and which apparently renders ferrocene more susceptible to nucleophilic attack. With the increasing of temperature, the loss of ferrocene (terminal) is accelerated, due to the capacitances and permeability of the SAM layers. The pos. shift of the E1/2 value is harder to interpret but may result because the ferrocene is in more intimate contact with the layer and is placed in a more hydrophobic, less polar environment. Other possible influences on the shift of E1/2 are discussed. This work confirms that electroactive terminal groups can provide information on the microenvironment at the SAM /electrolyte interface through variations in current and potential.

ST thermal effect voltammetry ferrocenecarbonyloxy heptanethiol self assembled monolayer

IT Temperature  
(effect in cyclic voltammetry of ferrocenecarbonyloxyheptanethiol self-assembled monolayer on gold)

IT Cyclic voltammetry  
Self-assembled monolayers  
(thermal effect on cyclic voltammetry of ferrocenecarbonyloxyheptanethiol self-assembled monolayer on gold)

IT Electrodeposits  
(underpotential; thermal effect on cyclic voltammetry of ferrocenecarbonyloxyheptanethiol self-assembled monolayer on gold)

IT 167166-47-4, 7-Ferrocenecarbonyloxy-1-heptanethiol  
(thermal effect on cyclic voltammetry of ferrocenecarbonyloxyheptanethiol self-assembled monolayer on gold)

IT 7440-57-5, Gold, uses  
(thermal effect on cyclic voltammetry of ferrocenecarbonyloxyheptanethiol self-assembled monolayer on gold)

IT 7601-90-3, Perchloric acid, uses  
(thermal effect on cyclic voltammetry of ferrocenecarbonyloxyheptanethiol self-assembled monolayer on gold in solution of)

IT 7440-50-8, Copper, uses  
(underpotential deposit; thermal effect on cyclic voltammetry of ferrocenecarbonyloxyheptanethiol self-assembled monolayer on gold)

OSC.G 6 THERE ARE 6 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)

UPOS.G Date last citing reference entered STN: 19 Nov 2010

OS.G CAPLUS 2010:1386102; 2009:1197039; 2009:251164; 2009:227639;  
2009:221906; 2009:56323

RE.CNT 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L31 ANSWER 5 OF 60 HCA COPYRIGHT 2011 ACS ON STN

AN 146:111086 HCA Full-text

ED Entered STN: 25 Jan 2007

TI Soft lithography using perfluorinated polyether molds and PRINT technology for fabrication of 3-D arrays on glass substrates

AU Wiles, Kenton B.; Wiles, Natasha S.; Herlihy, Kevin P.; Maynor, Benjamin W.; Rolland, Jason P.; DeSimone, Joseph M.

CS Dept. of Chemistry, Univ. of North Carolina, Chapel Hill, NC, 27599, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (2006), 6151(Pt. 2, Emerging Lithographic Technologies X), 61513F/1-61513F/9

CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- AB The fabrication of nanometer size structures and complex devices for microelectronics is of increasing importance so as to meet the challenges of large-scale com. applications. Soft lithog. typically employs elastomeric polydimethylsiloxane (PDMS) molds to replicate micro- and nanoscale features. However, the difficulties of PDMS for nanoscale fabrication include inherent incompatibility with organic liqs. and the production of a residual scum or flash layer that link features where the nano-structures meet the substrate. An emerging technol. advanced technique known as pattern replication in non-wetting templates (PRINT) avoids both of these dilemmas by utilizing photocurable perfluorinated polyether (PFPE) rather than PDMS as the elastomeric molding material. PFPE is a liquid at room temperature that exhibits low modulus and high gas permeability when cured. The highly fluorinated PFPE material allows for resistance to swelling by organic liqs. and very low surface energies, thereby preventing flash layer formation and ease of separation of PFPE molds from the substrates. These enhanced characteristics enable easy removal of the stamp from the molded material, thereby minimizing damage to the nanoscale features. The authors describe that PRINT can be operated in two different modes depending on whether the objects to be molded are to be removed and harvested (i.e. to make shape specific organic particles) or whether scum free objects are desired which are adhered onto the substrate (i.e. for scum free pattern generation using imprint lithog.). The former can be achieved using a non-reactive, low surface energy substrate (PRINT: particle replication in non-wetting templates) and the latter can be achieved using a reactive, low surface energy substrate (PRINT: pattern replication in non-wetting templates). The authors show that the PRINT technol. can be used to fabricate nanoparticle arrays covalently bound to a glass substrate with no scum layer. The nanometer size arrays were fabricated using a PFPE mold and a self-assembled monolayer (SAM) fluorinated glass substrate that was also functionalized with free-radically reactive SAM methacrylate moieties. The molded polymeric materials were covalently bound to the glass substrate through thermal curing with the methacrylate groups to permit three dimensional array fabrication. The low surface energies of the PFPE mold and fluorinated glass substrate allowed for no flash layer formation, permitting well resolved structures.
- ST soft lithog perfluorinated polyether mold PRINT technol;  
nanoinprint lithog perfluoropolyether mold 3D nanoparticle array  
glass bound; hot embossing lithog perfluoropolyether  
mold nanoparticle array glass bound
- IT Nanoparticles  
Self-assembled monolayers  
Surface energy  
(fabrication of 3D nanoparticle arrays covalently bound to  
functionalized glass substrate by nanoinprint lithog  
. using perfluoropolyether mold)
- IT Contact angle  
(fluorinated glass functionalized with reactive SAM  
methacrylate moieties for fabrication of bound 3D nanoparticle arrays  
by nanoinprint lithog. using perfluoropolyether mold)
- IT Lithography  
(nanoinprint; nanoinprint lithog. fabrication of 3D  
nanoparticle arrays covalently bound to glass substrate using  
perfluoropolyether mold)
- IT Lithographic plates  
(nanoinprint; preparation of perfluoropolyether mold for nanoinprint  
lithog. fabrication of 3D nanoparticle arrays covalently bound  
to glass substrate)
- IT Polyethers  
(perfluoro, diols, reaction products with isocyanatoethyl methacrylate;

fabrication of 3D nanoparticle arrays covalently bound to glass substrate by nanoimprint lithog. using perfluoropolyether mold)

- IT Fluoropolymers  
(polyether-, perfluoro, diols, reaction products with isocyanatoethyl methacrylate; fabrication of 3D nanoparticle arrays covalently bound to glass substrate by nanoimprint lithog. using perfluoropolyether mold)
- IT 7351-61-3D, 3-Trichlorosilyl propylmethacrylate, glass-bound, reaction product with poly(trimethylolpropane triacrylate) 220791-24-2D, (Trichloroperfluorooctyl)silane, glass-bound  
(fabrication of 3D nanoparticle arrays covalently bound to functionalized glass substrate by nanoimprint lithog. using perfluoropolyether mold)
- IT 36446-02-3DP, Poly(trimethylolpropane triacrylate), reaction product with fluorinated glass bound trichlorosilyl propylmethacrylate  
(fabrication of 3D nanoparticle arrays covalently bound to functionalized glass substrate by nanoimprint lithog. using perfluoropolyether mold)
- IT 947-19-3,  $\alpha$ -Hydroxy cyclohexyl phenyl ketone  
(methacrylate end-capping of perfluoropolyether diol followed by photocuring to form crosslinked network for fabrication of nanoimprint lithog. mold)
- IT 30674-80-7D, reaction product with perfluoropolyether diol  
(mold; nanoimprint lithog. fabrication of 3D nanoparticle arrays covalently bound to glass substrate using perfluoropolyether mold)

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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L31 ANSWER 6 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 146:109655 HCA Full-text

ED Entered STN: 25 Jan 2007

TI Structure and electrochemical behaviour of 4,7-diazaheptyl-trimethoxy-silane and vinyl-trialkoxysilane adsorbed at silver surface

AU Luczak, Teresa; Pankiewicz, Radoslaw; Leska, Boguslawa; Schroeder, Grzegorz; Beltowska-Brzezinska, Maria; Brzezinski, Bogumil

CS Faculty of Chemistry, A. Mickiewicz University, Poznan, PL-60780, Pol.

SO Journal of Molecular Structure (2006), 800(1-3), 140-145

CODEN: JMOSB4; ISSN: 0022-2860

PB Elsevier B.V.

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 66, 69

- AB Novel self-assembled monolayers were obtained on Ag using 4,7-diazaheptyl-trimethoxy-silane (SiN) and vinyl-trialkoxysilane (SiVA, where the alkyl group is 3,6,9,12,15,18,21,24,27,30,33,36,39,42,45,48,51,54,57,60-eicoxa-hexaheptaconan). Thus modified metal surface was protected against electrooxidn. A densely packed monolayer remained stable and did not desorb from the Ag electrode on the potential cycling. The structure of SiN and SiVA as well as their complexes with Li<sup>+</sup> cations were calculated and visualized by the AM1d and PM5 semi-empirical methods.
- ST diazaheptyltrimethoxysilane vinyltrialkoxysilane adsorbed silver electrochem inactive self assembled monolayer
- IT Adsorbed substances  
(electrochem. oxidation of silver and effect of diazaheptyltrimethoxysilane and vinyltrialkoxysilane adsorbates)
- IT Formation enthalpy  
(of diazaheptyltrimethoxysilane and vinyltrialkoxysilane on and their lithium complexes and of diazaheptyltrimethoxysilane and vinyltrialkoxysilane on coordinated and chemical bonded to silver)
- IT Chemisorption  
Complexation  
(of diazaheptyltrimethoxysilane and vinyltrialkoxysilane on silver)
- IT Oxidation, electrochemical  
(of silver and effect of diazaheptyltrimethoxysilane and vinyltrialkoxysilane adsorbates)
- IT Cyclic voltammetry  
(of silver electrode with and without modification with diazaheptyltrimethoxysilane in propylene carbonate containing LiClO<sub>4</sub>)
- IT Chemically modified electrodes  
(silver modified with diazaheptyltrimethoxysilane)
- IT Order  
Self-assembled monolayers  
(well-ordered self-assembled monolayers of diazaheptyltrimethoxysilane and vinyltrialkoxysilane on silver with electrochem. inactivity and protection of silver against electrochem. oxidation)
- IT 917950-37-9  
(SiVA; well-ordered self-assembled monolayers on silver with electrochem. inactivity and protection of silver against electrochem. oxidation)
- IT 1760-24-3D, lithium complexes 7439-93-2D, Lithium, complexes with diazaheptyltrimethoxysilane and vinyltrialkoxysilane on 917950-37-9D, lithium complexes  
(heat of formation on silver)
- IT 7440-22-4, Silver, uses  
(well-ordered self-assembled monolayers of diazaheptyltrimethoxysilane and vinyltrialkoxysilane on silver with electrochem. inactivity and protection of silver against electrochem. oxidation)
- IT 1760-24-3  
(well-ordered self-assembled monolayers on silver with electrochem. inactivity and protection of silver against electrochem. oxidation)
- OSC.G 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)
- UPOS.G Date last citing reference entered STN: 03 Aug 2011
- OS.G CAPLUS 2009:850615; 2009:517820; 2008:1444819; 2008:1308464; 2008:467104
- RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE CITED REFERENCES
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L31 ANSWER 7 OF 60 HCA COPYRIGHT 2011 ACS ON STN

AN 144:157459 HCA [Full-text](#)

ED Entered STN: 21 Feb 2006

TI Mapping molecular orientation of pentacene on patterned Au surface

AU Hsu, Y. J.; Hu, W. S.; Wei, D. H.; Wu, Y. S.; Tao, Y. T.

CS National Synchrotron Radiation Research Center, Hsinchu, 30076, Taiwan

SO Journal of Electron Spectroscopy and Related Phenomena (2005),

144-147, 401-404

CODEN: JESRAW; ISSN: 0368-2048

PB Elsevier B.V.

DT Journal

LA English

CC 66-3 (Surface Chemistry and Colloids)

AB With a photoemission electron microscope, the authors studied the orientation of pentacene films deposited on Au surface that was patterned with self-assembled monolayers (SAMs). Organic thiols  $X(CH_2)_nSH$  with  $X = -COOH$  or  $-Me$  and an aromatic thiol; served as alignment layers to control the orientation of pentacene mols. thermally deposited on top of the SAM. According to the PEEM images and near-edge x-ray absorption fine structure spectra, a SAM exposing a nonpolar Me group, a terphenyl group or a polar carboxyl group all induced perpendicular alignment of the pentacene moiety, in contrast with parallel alignment on a bare Au surface.

ST pentacene orientation thiol self assembled

monolayer patterned gold surface

IT Thiols, properties

(aryl; mapping mol. orientation of pentacene on Au

surface patterned with thiol self-assembled

monolayers using photoemission electron microscopy and NEXAFS

spectra)

IT Molecular orientation

NEXAFS spectra

Self-assembled monolayers

(mapping mol. orientation of pentacene on Au surface

patterned with thiol self-assembled

monolayers using photoemission electron microscopy and NEXAFS

spectra)

IT Thiols, properties

(mapping mol. orientation of pentacene on Au surface

patterned with thiol self-assembled

monolayers using photoemission electron microscopy and NEXAFS spectra)

IT Phenols, properties  
(thiophenols; mapping mol. orientation of pentacene on Au surface patterned with thiol self-assembled monolayers using photoemission electron microscopy and NEXAFS spectra)

IT 135-48-8, Pentacene 7440-57-5, Gold, properties 78540-82-6, [1,1':4',1''-Terphenyl]-4-methanethiol  
(mapping mol. orientation of pentacene on Au surface patterned with thiol self-assembled monolayers using photoemission electron microscopy and NEXAFS spectra)

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

UPOS.G Date last citing reference entered STN: 16 Feb 2009

OS.G CAPLUS 2008:338009; 2008:205716

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L31 ANSWER 8 OF 60 HCA COPYRIGHT 2011 ACS ON STN

AN 144:137315 HCA Full-text

ED Entered STN: 09 Feb 2006

TI The geometry of nanometer-sized electrodes and its influence on electrolytic currents and metal deposition processes in scanning tunneling and scanning electrochemical microscopy

AU Sklyar, Oleg; Treutler, Thomas H.; Vlachopoulos, Nikolaos; Wittstock, Gunther

CS Carl von Ossietzky University of Oldenburg, Institute of Pure and Applied Chemistry and Institute of Chemistry and Biology of the Marine Environment (ICBM), Oldenburg, D-26111, Germany

SO Surface Science (2005), 597(1-3), 181-195  
CODEN: SUSCAS; ISSN: 0039-6028

PB Elsevier B.V.

DT Journal

LA English

CC 72-2 (Electrochemistry)  
Section cross-reference(s): 56, 66

AB Electrodes with an effective radius of .apprx.10 nm were produced by a combination of electrochem. etching, electrophoretic deposition of polymer, and heat curing. Their size and stability were characterized by cyclic voltammetry. They were then used in combined electrochem. scanning tunneling microscopic (ECSTM) and scanning electrochem. microscopic (SECM) expts. In an extension of an earlier report, electrochem. surface modification approaches are reported here. They comprise the local electrochem. removal of a self-assembled monolayer (SAM) of dodecanethiol on flame-annealed Au by an electrochem. desorption procedure. The possibility of local electrochem. deposition is demonstrated by positioning a nanoelectrode 0.5 nm above a surface and switching off the distance regulation while performing an

electrodeposition of Pt at the tip. The growing deposit bridges the tip-sample gap. If the distance regulation is switched on after 1 ms, the Pt junction is disrupted leaving a Pt nanodot at the sample surface. The dot was characterized by ECSTM expts. after solution exchange. Digital simulations by the boundary element method (BEM) provide a quant. description of Faraday currents in nanoelectrochem. assemblies. A software tool was created that can accept arbitrary geometries as input data sets. The flexibility of the simulation strategy was demonstrated by the calcn. of local current densities during Cu electrodeposition on a smooth electrode in the presence of an ECSTM tip close to the surface. The current densities deviate <1% from those in the absence of tip if the average c.d. is kept <1  $\mu\text{A cm}^{-2}$ . SECM approach curves for nanoelectrodes were also calculated

- ST geometry nanoelectrode effect current metal deposition electrochem STM
- SECM
- IT Current density
  - (calcn. local current densities during Cu electrodeposition on smooth electrode in presence of ECSTM tip close to surface)
- IT Electrodeposition
  - (digital simulation of calcn. local current densities during Cu electrodeposition on smooth electrode in presence of ECSTM tip close to surface)
- IT Simulation and Modeling
  - (digital; local current densities during Cu electrodeposition on smooth electrode in presence of ECSTM tip close to surface)
- IT Scanning tunneling microscopy
  - (electrochem.; geometry of nanometer-sized electrodes and its effect on electrolytic currents and metal deposition in scanning tunneling and scanning electrochem. microscopy)
- IT Desorption
  - (electrochem.; of dodecanethiol self-assembled monolayer of dodecanethiol on flame-annealed Au and geometry of nanoelectrodes and its effect on electrolytic currents and metal deposition in scanning tunneling and scanning electrochem. microscopy)
- IT Scanning electrochemical microscopy
  - (geometry of nanometer-sized electrodes and its effect on electrolytic currents and metal deposition in scanning tunneling and scanning electrochem. microscopy)
- IT Microelectrodes
  - (nanoelectrodes; geometry of nanometer-sized electrodes and its effect on electrolytic currents and metal deposition in scanning tunneling and scanning electrochem. microscopy)
- IT Cyclic voltammetry
  - (of cone-shaped ultramicroelectrodes produced by etching and electrophoretic coating and heat curing in sulfuric acid solution containing  $\text{Ru}(\text{NH}_3)_6\text{Cl}_3$ )
- IT Self-assembled monolayers
  - (of dodecanethiol self-assembled monolayer of dodecanethiol on flame-annealed Au and geometry of nanoelectrodes and its effect on electrolytic currents and metal deposition in scanning tunneling and scanning electrochem. microscopy)
- IT Scanning tunneling microscopes
  - (tips, electrochem.; digital simulation of calcn. local current densities during Cu electrodeposition on smooth electrode in presence of ECSTM tip close to surface)
- IT 14282-91-8, Hexaammineruthenium(3+) trichloride
  - (cyclic voltammetry of cone-shaped ultramicroelectrodes produced by etching and electrophoretic coating and heat curing in sulfuric acid solution containing  $\text{Ru}(\text{NH}_3)_6\text{Cl}_3$ )
- IT 7664-93-9, Sulfuric acid, uses
  - (cyclic voltammetry of cone-shaped ultramicroelectrodes

- produced by etching and electrophoretic coating and heat curing in sulfuric acid solution containing Ru(NH<sub>3</sub>)<sub>6</sub>Cl<sub>3</sub>)
- IT 7440-06-4P, Platinum, uses  
(localized electrodeposition of Pt on dodecanethiolate-covered flame-annealed Au and geometry of nanoelectrodes and its effect on electrolytic currents and metal deposition in scanning tunneling and scanning electrochem. microscopy)
- IT 112-55-0, 1-Dodecanethiol 7440-57-5, Gold, uses  
(localized electrodeposition of Pt on dodecanethiolate-covered flame-annealed gold and geometry of nanoelectrodes and its effect on electrolytic currents and metal deposition in scanning tunneling and scanning electrochem. microscopy)
- OSC.G 14 THERE ARE 14 CAPLUS RECORDS THAT CITE THIS RECORD (14 CITINGS)
- UPOS.G Date last citing reference entered STN: 05 Aug 2011
- OS.G CAPLUS 2011:892732; 2010:1383552; 2010:1455360; 2010:1457243;  
2010:74964; 2009:892064; 2009:591463; 2008:1296953; 2008:1269422;  
2008:117089; 2007:1084783; 2007:393893; 2007:78959; 2006:725369
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L31 ANSWER 9 OF 60 HCA COPYRIGHT 2011 ACS ON STN

AN 144:117676 HCA Full-text

ED Entered STN: 02 Feb 2006

TI Hot embossing lithography: Release layer

characterization by chemical force microscopy

AU Cameron, Neil S.; Ott, Arnaud; Roberge, Helene; Veres, Teodor

CS IMI, National Research Council Canada, Boucherville, QC, J4B 6Y4, Can.

SO Materials Research Society Symposium Proceedings (2005),

872(Micro- and Nanosystems--Materials and Devices), 197-202

CODEN: MRSPDH; ISSN: 0272-9172

PB Materials Research Society

DT Journal

LA English

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)

AB Hot embossing lithog. is a powerful method of replicating three-dimensional micro- and nano-structures using a stamp that is pressed into a heat-softened polymer resin. Cooling below the glass-transition temperature (T<sub>g</sub>) of the polymer cures the motifs and the stamp and substrate are then separated. Successful replication is therefore contingent on interfacial interactions during the embossing phase and most importantly during the separation or release phase. Various organo- and perfluoro-silane release layers have been proposed and studied. The authors have employed variable temperature chemical force microscopy (VT-CFM) using tips silanized with four different SAMs interacting with a thin-film of poly(cyclic olefin), (PCO). The silanized-tip/polymer interaction was studied over a temperature range spanning the T<sub>g</sub> of the PCO (.apprx.373 K). Adhesion between a saturated hydrocarbon-decorated tip (OTS) and PCO was comparatively strong (170 nN) 30 K above the T<sub>g</sub> of the polymer. Adhesion among the perfluorinated tips was 20 to 50 nN lower at 373 K with a relative increase in perfluoromethyl groups (weight/weight).

ST hot embossing lithog release layer characterization  
chem force microscopy; nanoimprint lithog release layer

characterization chem force microscopy

IT Adhesion, physical  
Atomic force microscopy  
Contact angle  
Glass transition temperature  
Release coatings  
Self-assembled monolayers  
Silylation  
Surface potential  
(chemical force microscopy in characterization of release layers for hot embossing lithog.)

IT Lithographic plates  
(nanoimprint stamps; chemical force microscopy in characterization of release layers for hot embossing lithog.)

IT Lithography  
(nanoimprint; chemical force microscopy in characterization of release layers for hot embossing lithog.)

IT 351376-50-6, Zeonor 750R  
(chemical force microscopy in characterization of release layers for hot embossing lithog.)

IT 5283-66-9, Octyltrichlorosilane 78560-44-8,  
1,1,2,2-Tetrahydroperfluorodecyltrichlorosilane 78560-45-9,  
1,1,2,2-Tetrahydroperfluorooctyltrichlorosilane 149838-19-7,  
3-(Heptafluoroisopropoxy)propyltriethoxysilane  
(release layer; chemical force microscopy in characterization of release layers for hot embossing lithog.)

IT 7440-21-3, Silicon, processes  
(wafer substrate; chemical force microscopy in characterization of release layers for hot embossing lithog.)

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

UPOS.G Date last citing reference entered STN: 16 Feb 2009

OS.G CAPLUS 2008:231150

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L31 ANSWER 10 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 143:474084 HCA Full-text

ED Entered STN: 15 Dec 2005

TI Assembly of nanomaterials through hybrid conjugation with ordered self-assembled monolayers and proteins

AU Ma, Hong; Zin, Melvin T.; Ylp, Hinlap; Horwitz, Joel S.; Kang, Mun-Sik; Xu, Qing-Min; Sarikaya, Mehmet; Jen, Alex K.-Y.

CS Department of Materials Science and Engineering, University of Washington,

Seattle, WA, 98195-2120, USA  
SO PMSE Preprints (2005), 93, 343-345  
CODEN: PPMRA9; ISSN: 1550-6703  
PB American Chemical Society  
DT Journal; (computer optical disk)  
LA English  
CC 6-3 (General Biochemistry)  
AB In this proof-of-concept demonstration using gold-binding protein, the patterning of genetically engineered polypeptides by microcontact printing ( $\mu$ CP) was evaluated. By combining  $\mu$ CP with surface chemical reaction patterns of hybrid structures consisting of polypeptides and organic molecules can be generated on the substrate with sub-micron dimensions. Laterally structured hybrid assemblies composed of genetically engineered polypeptides and fused-ring organic molecules were used to guide the assembly of gold nanoparticles in a site-selective way. Peptide GBP-1 was covalently bonded onto the self-assembled monolayers of  $\pi$ -conjugated thiols pre-formed on Au(111) substrate by the combination of  $\mu$ CP and surface reaction to produce a two-dimensional template with sub-micron patterns. Assembly of gold nanoparticles occurred through surface recognition.

ST gold binding protein 1 self assembled  
monolayer gold; microcontact printing nanoparticle nanomaterial;  
CBP 1 gold protein

IT Proteins  
(GBP-1 (gold-binding protein 1); assembly of nanomaterials through hybrid conjugation with ordered self-assembled monolayers and proteins)

IT Nanoparticles  
Self-assembled monolayers  
Self-assembly  
(assembly of nanomaterials through hybrid conjugation with ordered self-assembled monolayers and proteins)

IT Lithography  
(microcontact printing; assembly of nanomaterials through hybrid conjugation with ordered self-assembled monolayers and proteins)

IT Materials  
Nanostructures  
(nanomaterials; assembly of nanomaterials through hybrid conjugation with ordered self-assembled monolayers and proteins)

IT 869503-85-5  
(GBP-1 (gold-binding protein 1); assembly of nanomaterials through hybrid conjugation with ordered self-assembled monolayers and proteins)

IT 7440-57-5, Gold, uses 869502-24-9  
(assembly of nanomaterials through hybrid conjugation with ordered self-assembled monolayers and proteins)

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L31 ANSWER 11 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 143:468270 HCA [Full-text](#)  
ED Entered STN: 08 Dec 2005  
TI Characterization of self-assembled thin films of zirconium phosphonate/  
aromatic diimides  
AU Marcon, Rodrigo O.; Brochsztain, Sergio  
CS Centro Interdisciplinar de Investigacao Bioquimica, Universidade de Mogi  
das Cruzes, Mogi das Cruzes, 08780-911, Brazil  
SO Thin Solid Films (2005), 492(1-2), 30-34  
CODEN: THSFAP; ISSN: 0040-6090  
PB Elsevier B.V.  
DT Journal  
LA English  
CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 29, 66  
OS CASREACT 143:468270  
AB The synthesis of three novel phosphonate-substituted aromatic diimides is  
described: N,N'-bis(2-phosphonoethyl)pyromellitimide (PPI), N,N'-bis(2-  
phosphonoethyl)-1,4,5,8-naphthalenediimide (PNDI) and N,N'-bis(2-  
phosphonoethyl)-3,4,9,10-perylene diimide (PPDI). The imides are water-  
soluble, allowing spectroscopical studies to be performed in water. PPI and  
PNDI exist in the monomeric form in water, but PPDI formed dimers. Self-  
assembled thin films of the three compds. were grown on phosphonate-primed  
silicon and quartz substrates by the zirconium phosphonate method. Film  
growth was followed by ellipsometry (silicon) and UV/visible absorption  
spectroscopy (quartz). The films obtained were highly thermally and  
solvolitically stable for all the three imides, making them excellent  
candidates for applications in nanotechnol. devices.  
ST self assembled thin film zirconium phosphonate arom diimide  
IT Self-assembled monolayers  
(characterization of self-assembled thin films of  
zirconium phosphonate/aromatic diimides)  
IT Imides  
(diimides; characterization of self-assembled thin films of zirconium  
phosphonate/aromatic diimides)  
IT Aggregation  
(dye aggregation in water; characterization of self-assembled thin  
films of zirconium phosphonate/aromatic diimides)  
IT Molar absorptivity  
(increases with diimide ring size; characterization of  
self-assembled thin films of zirconium phosphonate/aromatic  
diimides)  
IT UV and visible spectra  
(of diimides in solution and film; characterization of self-assembled thin  
films of zirconium phosphonate/aromatic diimides)  
IT 243126-11-6P, N,N'-Bis(2-phosphonoethyl)-1,4,5,8-naphthalenediimide  
869371-05-1P, N,N'-Bis(2-phosphonoethyl)pyromellitimide 869371-15-3P,  
N,N'-Bis(2-phosphonoethyl)-3,4,9,10-perylene diimide  
(characterization of self-assembled thin films of zirconium  
phosphonate/aromatic diimides)  
IT 869371-10-8P 869371-26-6P  
(characterization of self-assembled thin films of zirconium  
phosphonate/aromatic diimides)  
IT 2041-14-7, 2-Aminoethylphosphonic acid  
(imidation reactions; characterization of self-assembled thin films of  
zirconium phosphonate/aromatic diimides)  
IT 81-30-1, 1,4,5,8-Naphthalenetetracarboxylic dianhydride 89-32-7,



Pyromellitic dianhydride 128-69-8, 3,4,9,10-Perylenetetracarboxylic dianhydride  
(imidation; characterization of self-assembled thin films of zirconium phosphonate/aromatic diimides)

IT 869371-16-4P  
(saponification; characterization of self-assembled thin films of zirconium phosphonate/aromatic diimides)

IT 7440-21-3D, Silicon, successive surface modifications with aminopropyl, phosphonate, and zirconate groups 14808-60-7D, Quartz, successive surface modifications with aminopropyl, phosphonate, and zirconate groups, uses  
(substrate; characterization of self-assembled thin films of zirconium phosphonate/aromatic diimides)

IT 10025-87-3, Phosphoryl chloride  
(surface reaction with aminopropylated silicon and quartz for generating surface phosphonate groups; characterization of self-assembled thin films of zirconium phosphonate/aromatic diimides)

IT 919-30-2, 3-(Aminopropyl)triethoxysilane  
(surface reaction with silicon and quartz for generating surface aminopropyl groups; characterization of self-assembled thin films of zirconium phosphonate/aromatic diimides)

IT 7699-43-6, Zirconyl chloride  
(surface reaction with successively aminopropylated and phosphonated silicon and quartz for generating surface zirconate groups; characterization of self-assembled thin films of zirconium phosphonate/aromatic diimides)

OSC.G 8 THERE ARE 8 CAPLUS RECORDS THAT CITE THIS RECORD (8 CITINGS)

UPOS.G Date last citing reference entered STN: 08 Nov 2010

OS.G CAPLUS 2010:1360588; 2009:435969; 2009:220171; 2009:156271; 2007:1167283; 2007:448185; 2006:843380; 2006:45088

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L31 ANSWER 12 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 143:355013 HCA Full-text

ED Entered STN: 27 Oct 2005

TI Scanning Tunneling Microscopy, Fourier Transform Infrared Spectroscopy, and Electrochemical Characterization of 2-Naphthalenethiol Self-Assembled Monolayers on the Au Surface: A Study of Bridge-Mediated Electron Transfer in Ru(NH3)62+|Ru(NH3)63+ Redox

## Reactions

AU Ganesh, V.; Lakshminarayanan, V.

CS Raman Research Institute, Bangalore, 560080, India

SO Journal of Physical Chemistry B (2005), 109(34), 16372-16381

CODEN: JPCBFK; ISSN: 1520-6106

PB American Chemical Society

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 66, 67

- AB The authors have studied the structure, adsorption kinetics, and barrier properties of self-assembled monolayers of 2-naphthalenethiol on Au using electrochem. techniques, grazing-angle FTIR spectroscopy, and scanning tunneling microscopy (STM). The results of cyclic voltammetric and impedance measurements using redox probes show that 2-naphthalenethiol on Au forms a stable and reproducible, but moderately blocking, monolayer. Annealing of the self-assembled monolayer (SAM)-modified surface at  $72 \pm 2^\circ$  remarkably improves the blocking property of the monolayer of 2-naphthalenethiol on Au. From the study of kinetics of SAM formation, the self-assembly follows Langmuir adsorption isotherm. The STM and FTIR results show that the mols. are adsorbed with the naphthalene ring tilted from the surface normal by forming a  $\sqrt{3} \times \sqrt{3}$  R30° overlayer structure. The electron-transfer reaction of ferro/ferricyanide in the freshly formed monolayer occurs predominantly through the pinholes and defects present in the monolayer. However, in the case of thermally annealed specimen, although the ferro/ferricyanide reaction is almost completely blocked, the electron-transfer reaction of hexaammineruthenium(III) chloride is not significantly inhibited. Probably the electron-transfer reaction in the case of the Ru redox couple takes place by a tunneling mechanism through the high-electron-d. aromatic naphthalene ring acting as a bridge between the monolayer-modified electrode and the Ru complex.
- ST STM IR spectra electrochem naphthalenethiol SAM monolayer gold electrode; ruthenium ammine redox reaction bridge mediated electron transfer; cyclic voltammetry impedance naphthalenethiol self assembled monolayer gold; cyanoferrate electrochem naphthalenethiol monolayer modified gold electrode
- IT Self-assembled monolayers  
(STM and IR spectra and electrochem. characterization of naphthalenethiol self-assembled monolayers on Au surface and study of bridge-mediated electron transfer in  $\text{Ru}(\text{NH}_3)_6^{2+}/\text{Ru}(\text{NH}_3)_6^{3+}$  redox reactions)
- IT Redox reaction  
(electrochem.; of ruthenium-ammine complexes and cyanoferrates at naphthalenethiol self-assembled monolayers on Au surface)
- IT Chemically modified electrodes  
(naphthalenethiol-modified gold)
- IT Cyclic voltammetry  
Electric impedance  
(of cyanoferrates and Ru-ammine complexes at naphthalenethiol-modified gold electrode)
- IT Surface structure  
(of naphthalenethiol adsorbed on gold)
- IT Molecular orientation  
(of naphthalenethiol adsorbed on gold electrode)
- IT IR spectra  
(of naphthalenethiol self-assembled monolayers on Au surface)
- IT Annealing  
(of naphthalenethiol-modified gold electrode)

IT Electric capacitance-potential relationship  
(of naphthalenethiol-modified gold electrode in NaF solution)

IT Adsorbed monolayers  
(orientation of naphthalenethiol adsorbed on gold electrode)

IT 7440-57-5, Gold, uses  
(STM and IR spectra and electrochem. characterization of  
naphthalenethiol self-assembled monolayers  
on Au surface and study of bridge-mediated electron transfer  
in Ru(NH3)62+/Ru(NH3)63+ redox reactions)

IT 91-60-1, 2-Naphthalenethiol  
(STM and IR spectra and electrochem. characterization of  
naphthalenethiol self-assembled monolayers  
on Au surface and study of bridge-mediated electron transfer  
in Ru(NH3)62+/Ru(NH3)63+ redox reactions)

IT 18943-33-4, Hexaammineruthenium(3+) 19052-44-9, Hexaammineruthenium(2+)  
(bridge-mediated electron transfer in Ru(NH3)62+/Ru(NH3)63+ redox  
reactions at naphthalenethiol self-assembled  
monolayers on Au surface)

IT 13746-66-2, Potassium ferricyanide 13943-58-3, Potassium ferrocyanide  
(cyclic voltammetry and elec. impedance at  
naphthalenethiol-modified gold electrode in NaF solution)

IT 7791-03-9, Lithium perchlorate (LiClO4) 14282-91-8,  
Ruthenium(3+), hexaammine-, trichloride  
(cyclic voltammetry and elec. impedance of cyanoferrates at  
naphthalenethiol-modified gold electrode in LiClO4 solution)

IT 7681-49-4, Sodium fluoride (NaF), uses  
(cyclic voltammetry and elec. impedance of cyanoferrates at  
naphthalenethiol-modified gold electrode in NaF solution)

IT 13408-62-3, Ferricyanide 13408-63-4, Ferrocyanide  
(electrochem. redox reaction at naphthalenethiol self-  
assembled monolayers on Au surface)

OSC.G 20 THERE ARE 20 CAPLUS RECORDS THAT CITE THIS RECORD (20 CITINGS)

UPOS.G Date last citing reference entered STN: 15 Aug 2011

OS.G CAPLUS 2011:951374; 2011:896773; 2011:682801; 2011:421454; 2010:831640;  
2010:193073; 2010:102549; 2009:1243968; 2009:1184243;  
2009:999491; 2009:386766; 2008:1050469; 2008:752437; 2008:715354;  
2008:297299; 2007:1098964; 2007:766705; 2007:740820; 2006:976163;  
2006:908708

RE.CNT 67 THERE ARE 67 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L31 ANSWER 13 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 143:293107 HCA [Full-text](#)

ED Entered STN: 06 Oct 2005

TI Self-assembled monolayers of isocyanides on  
nickel electrodes

AU Lee, Youngu; Morales, Gustavo M.; Yu, Luping

CS Department of Chemistry and James Franck Institute, The University of  
Chicago, Chicago, IL, 60637, USA

SO Angewandte Chemie, International Edition (2005), 44(27),  
4228-4231

CODEN: ACIEF5; ISSN: 1433-7851

PB Wiley-VCH Verlag GmbH &amp; Co. KGaA

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

OS CASREACT 143:293107

AB Monolayers of ferrocenyl-terminated isocyanides are strongly chemisorbed on nickel surfaces. The nickel-isocyanide interaction has a parallel binding mode, and the monolayers have higher thermal stability in boiling ethanol than thiol monolayers on gold. The nickel-isocyanide monolayers could be useful in mol. electronics.

ST self assembled monolayer isocyanide nickel  
electrode thermal stability

IT Self-assembled monolayers  
(formation of self-assembled monolayer of  
isocyanide on nickel electrode)

IT Cyclic voltammetry  
Thermal stability  
(formation of self-assembled monolayer of  
isocyanide on nickel electrode and its)

IT 7440-02-0, Nickel, processes  
(formation of self-assembled monolayer of  
isocyanide on nickel electrode)

IT 134029-92-8P  
(formation of self-assembled monolayer of  
isocyanide on nickel electrode)

IT 864297-49-4P 864297-52-9P  
(intermediate; formation of self-assembled  
monolayer of isocyanide on nickel electrode)

IT 151781-66-7P 151781-67-8P 182413-34-9P 864297-50-7P  
(intermediate; to study formation of self-assembled  
monolayer of isocyanide on nickel electrode)

IT 864297-48-3P 864297-51-8P  
(intermediate; to synthesize functionalized isocyanide)

IT 136237-36-0  
(to synthesize functionalized isocyanide)

OSC.G 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)

UPOS.G Date last citing reference entered STN: 19 Jul 2011

OS.G CAPLUS 2011:871995; 2009:1481210; 2008:814490; 2008:194226; 2007:764503;  
2007:374339; 2007:55674; 2006:1101383; 2006:965183; 2006:904359

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L31 ANSWER 14 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 143:239491 HCA [Full-text](#)

ED Entered STN: 15 Sep 2005

TI Wafer-Scale Fabrication of Polymer-Based Microdevices  
via Injection Molding and Photolithographic Micropatterning  
Protocols

AU Lee, Dae-Sik; Yang, Haesik; Chung, Kwang-Hyo; Pyo, Hyeon-Bong

CS BioMEMS Group, ETRI, Daejeon, Yuseong-Gu, 305-350, S. Korea

SO Analytical Chemistry (2005), 77(16), 5414-5420

CODEN: ANCHAM; ISSN: 0003-2700

PB American Chemical Society

DT Journal

LA English

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 38, 74

AB Micropatterns for temperature sensing and microelectrode sets for electroanal.  
were implemented on an injection-molded thin polymer membrane using  
conventional semiconductor processing techniques (i.e., standard photolithog.  
methods). A cyclic olefin copolymer (COC, Topas 6015) was used as substrate  
because of its high chemical and thermal stability. A COC 5-in. wafer (1-mm  
thickness) was manufactured by injection molding, where polymer membranes  
(.apprx.130  $\mu$ m thick and 3 mm + 6 mm in area) are implemented simultaneously  
to reduce local thermal mass around micropatterned heaters and temperature  
sensors. The highly polished surface (.apprx.4 nm within 40  $\mu$ m + 40  $\mu$ m area)  
of the fabricated COC wafer and its good resistance to typical process chems.  
makes it possible to use standard photolithog. and etching protocols on the  
COC wafer. Gold micropatterns with a min. 5- $\mu$ m line width were fabricated as  
microheaters, temperature sensors, and microelectrodes. An insulating layer  
of aluminum oxide (Al<sub>2</sub>O<sub>3</sub>) was prepared on a COC-endurable low temperature  
(.apprx.120°) by atomic layer deposition and micropatterning for the electrode  
contacts. The heating and temperature sensor microdevice shows improved  
thermal insulation, and microelectrodes display good electrochem. performance  
as electrochem. sensors. The 5-in. wafer-level microfabrication method is a  
simple and cost-effective protocol to prepare polymer substrates and  
demonstrates good potential for application to highly integrated and  
miniaturized biomedical devices.

ST bicycloheptene ethylene copolymer substrate semiconductor device  
fabrication; injection molding cyclic polyolefin  
photolithog gold patterning microelectrode; temp sensor  
micropatterning cyclic polyolefin wafer  
substrate stability

IT Thermal stability

(fabrication of cyclic olefin copolymer wafer  
based microdevices by injection molding and photolithog  
. micropatterning protocols and device calibration)

IT Molding of plastics and rubbers

(injection; fabrication of cyclic olefin copolymer  
wafer based microdevices by injection molding and

photolithog. micropatterning protocols and device calibration)

IT Heating systems  
(microdevices; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT Materials processing  
(micropatterning; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT Electrochemical cells  
(polymer wafer based; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT Cycloalkenes  
(polymers; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT Electronic device fabrication  
Microelectrodes  
Semiconductor device fabrication  
Temperature sensors  
(polyolefin wafer based; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT Photolithography  
(submicron; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT 7757-79-1, Potassium nitrate, uses 14282-91-8, Hexaamminetrichlororuthenium  
(CV electrolyte; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT 1344-28-1, Aluminum oxide, processes  
(insulating layer; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT 7440-57-5, Gold, processes  
(micropattern contacts; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT 1322-36-7, Dodecanethiol  
(self-assembled monolayer on gold microelectrodes; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

IT 26007-43-2, Topas 6015  
(wafer, device substrate; fabrication of cyclic olefin copolymer wafer based microdevices by injection molding and photolithog. micropatterning protocols and device calibration)

OSC.G 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)

UPOS.G Date last citing reference entered STN: 15 Sep 2010

OS.G CAPLUS 2010:787013; 2010:561361; 2010:86210; 2009:276371; 2008:884522; 2008:780232; 2008:342680; 2007:581006; 2006:1185046; 2006:152901

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L31 ANSWER 15 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 142:452284 HCA Full-text  
ED Entered STN: 02 Jun 2005  
TI Molecular Dynamics Simulation Study on a Monolayer of Half  
[2]Rotaxane Self-Assembled on Au(111)  
AU Jang, Yun Hee; Jang, Seung Soon; Goddard, William A., III  
CS Materials and Process Simulation Center, Beckman Institute (139-74),  
California Institute of Technology, Pasadena, CA, 91125, USA  
SO Journal of the American Chemical Society (2005), 127(13),  
4959-4964  
CODEN: JACSAT; ISSN: 0002-7863  
PB American Chemical Society  
DT Journal



LA English  
CC 66-4 (Surface Chemistry and Colloids)  
AB The self-assembled monolayer (SAM) structure of the tetrathiafulvalene-side half of the Stoddart-Heath type [2]rotaxane on Au(111) surface was investigated using mol. dynamics (MD) simulations. We find that the orientation of the cyclobis(paraquat-p-phenylene) (CBPQT) ring depends dramatically on the coverage, changing in order to obtain highly packed SAMs. The ring lies with its large hollow parallel to the surface at lower coverage (up to one CBPQT per 27 surface Au atoms with a footprint of 1.9 nm<sup>2</sup>; 1/27) when free space is available around it, but as the coverage increases (up to one CBPQT per 12 surface Au atoms with a footprint of 0.9 nm<sup>2</sup>; 1/12), it tilts completely around its axis and lies with its smaller side (paraquat or Ph ring) parallel to the surface to accommodate the reduced area available. We find that the best packing densities correspond to one CBPQT per 12-18 surface Au atoms (1/18-1/12) with footprints in the range between 0.9 nm<sup>2</sup> and 1.3 nm<sup>2</sup>.  
ST simulation mol configuration SAM half rotaxane gold  
IT Simulation and Modeling  
(mol. dynamics; simulation for mol. configuration of SAM of half [2]rotaxane on gold)  
IT Configuration  
Self-assembled monolayers  
(simulation for mol. configuration of SAM of half [2]rotaxane on gold)  
IT Rotaxanes  
(simulation for mol. configuration of SAM of half [2]rotaxane on gold)  
IT 7440-57-5D, Gold, thiolated  
(simulation for mol. configuration of SAM of half [2]rotaxane on gold)  
IT 316821-20-2D, gold bound  
(simulation for mol. configuration of SAM of half [2]rotaxane on gold)  
OSC.G 33 THERE ARE 33 CAPLUS RECORDS THAT CITE THIS RECORD (34 CITINGS)  
UPOS.G Date last citing reference entered STN: 09 Aug 2011  
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L31 ANSWER 16 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 142:392016 HCA Full-text

ED Entered STN: 12 May 2005

TI Synthesis of Fluorinated Oligomers toward Physical Vapor Deposition  
Molecular Electronics Candidates

AU Maya, Francisco; Chanteau, Stephanie H.; Cheng, Long; Stewart, Michael P.;  
Tour, James M.

CS Department of Chemistry and Center for Nanoscale Science and Technology,  
Rice University, Houston, TX, 77005, USA

SO Chemistry of Materials (2005), 17(6), 1331-1345

CODEN: CMATEX; ISSN: 0897-4756

PB American Chemical Society

DT Journal

LA English

CC 22-9 (Physical Organic Chemistry)

Section cross-reference(s): 36, 66, 76

OS CASREACT 142:392016

AB New electron-deficient fluorinated oligo(phenylene ethynyls) (OPEs) with  
varied functional groups were synthesized as free thiols, nitriles, and  
pyridines, ready to be used for surface adhesion. Calculated dipole moments  
suggest better matching between energy levels of bulk interfaces and mol.  
frontier orbitals when compared to nonfluorinated OPEs. Differential scanning  
calorimetry confirmed a higher thermal stability than the nonfluorinated  
counterparts. Surface anal. by ellipsometry, contact angle goniometry, cyclic  
voltammetry, and surface IR and XPS verified that the OPEs chemisorb on Au and  
Pt surfaces. On the basis of the phys. properties of the fluorinated OPEs,  
they might be useful in future phys. vapor deposition techniques, methods that  
are typically used in standard semiconductor fabrication processes. Safety:  
deprotection of a thioacetate derivative led to a violent explosion.

ST fluorinated oligomer thiol nitrile pyridine chemisorption gold platinum;  
safety deprotection thioacetate

IT LUMO (molecular orbital)

(HOMO gap, of fluorinated oligo(phenylene ethynyls); synthesis of  
fluorinated oligo(phenylene ethynyls), their thermal  
stability, and surface anal. of self-  
assembled monolayers formed therefrom)

IT HOMO (molecular orbital)

(LUMO gap, of fluorinated oligo(phenylene ethynyls); synthesis of  
fluorinated oligo(phenylene ethynyls), their thermal  
stability, and surface anal. of self-  
assembled monolayers formed therefrom)

IT Thermal decomposition

(decomposition temperature of fluorinated oligo(phenylene ethynyls) vs.  
nonfluorinated analogs)

IT Passivation

(electrode passivation by fluorinated oligo(phenylene ethynyls);  
synthesis of fluorinated oligo(phenylene ethynyls), their  
thermal stability, and surface anal. of self-  
assembled monolayers formed therefrom)

IT Chemisorbed substances

(fluorinated oligo(phenylene ethynyls) on Au and Pt surfaces  
; synthesis of fluorinated oligo(phenylene ethynyls), their  
thermal stability, and surface anal. of self-  
assembled monolayers formed therefrom)

IT Polyacetylenes

(fluorinated oligo(phenylene ethynyls); synthesis of fluorinated  
oligo(phenylene ethynyls), their thermal stability, and  
surface anal. of self-assembled

- monolayers formed therefrom)
- IT Hydrophobicity  
X-ray photoelectron spectra  
(of fluorinated oligo(phenylene ethynylene) SAMs; synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT Dipole moment  
Electrostatic potential energy surface  
(of fluorinated oligo(phenylene ethynylene); synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT Melting point  
(of fluorinated oligo(phenylene ethynylenes) vs. nonfluorinated analogs)
- IT Differential scanning calorimetry  
Self-assembled monolayers  
Thermogravimetric analysis  
Total energy  
(of fluorinated oligo(phenylene ethynylenes); synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT 7440-06-4, Platinum, uses 7440-57-5, Gold, uses (SAM substrate and electrode; synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT 344-04-7, Bromopentafluorobenzene 170159-24-7 (Sonogashira coupling; synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT 14235-81-5P, 4-Ethynylaniline 812640-67-8P (Sonogashira coupling; synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT 850006-11-0P (attempted deprotection leading to explosion; synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT 656798-51-5P (coupling and reduction; synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT 540-37-4, p-Iodoaniline 1066-54-2, (Trimethylsilyl)acetylene 2510-22-7, 4-Ethynylpyridine 3032-92-6, 4-Ethynylbenzonitrile 15854-87-2, 4-Iodopyridine 25462-68-4, 2,5-Dibromo-4-nitroaniline 69746-43-6 (coupling; synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self-assembled monolayers formed therefrom)
- IT 5122-07-6P 20691-72-9P, 4-Iodo-2-nitroaniline 105752-04-3P 850006-05-2P 850006-08-5P 850006-10-9P (coupling; synthesis of fluorinated oligo(phenylene ethynylenes), their thermal stability, and surface anal. of self

-assembled monolayers formed therefrom)

IT 52168-00-0P 75867-39-9P 475666-81-0P 475666-82-1P 518982-26-8P  
 656798-50-4P 850006-04-1P 850006-06-3P 850006-09-6P  
 (deprotection; synthesis of fluorinated oligo(phenylene ethynylenes),  
 their thermal stability, and surface anal. of  
 self-assembled monolayers formed therefrom)

IT 656798-47-9P 656798-49-1P 850006-07-4P  
 (diazotization/iodination; synthesis of fluorinated oligo(phenylene  
 ethynylenes), their thermal stability, and surface  
 anal. of self-assembled monolayers formed  
 therefrom)

IT 88-74-4, 2-Nitroaniline 99-09-2, 3-Nitroaniline  
 (iodination; synthesis of fluorinated oligo(phenylene ethynylenes),  
 their thermal stability, and surface anal. of  
 self-assembled monolayers formed therefrom)

IT 850005-95-7DP, surface-bound monolayer 850005-96-8DP,  
 surface-bound monolayer 850005-97-9DP, surface-bound  
 monolayer 850005-98-0DP, surface-bound monolayer  
 850005-99-1DP, surface-bound monolayer 850006-00-7DP,  
 surface-bound monolayer 850006-01-8DP, surface-bound  
 monolayer 850006-02-9DP, surface-bound monolayer  
 850006-03-0DP, surface-bound monolayer  
 (synthesis of fluorinated oligo(phenylene ethynylenes), their  
 thermal stability, and surface anal. of self  
 -assembled monolayers formed therefrom)

IT 850005-95-7P 850005-96-8P 850005-97-9P 850005-98-0P 850005-99-1P  
 850006-00-7P 850006-01-8P 850006-02-9P 850006-03-0P  
 (target oligomer, FMO gap, total energy, and chemisorption; synthesis  
 of fluorinated oligo(phenylene ethynylenes), their thermal  
 stability, and surface anal. of self-  
 assembled monolayers formed therefrom)

OSC.G 25 THERE ARE 25 CAPLUS RECORDS THAT CITE THIS RECORD (25 CITINGS)

UPOS.G Date last citing reference entered STN: 24 Aug 2011

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AN 142:379945 HCA Full-text

ED Entered STN: 05 May 2005

TI Thermal Study of Accumulation of Conformational Disorders in the Self-Assembled Monolayers of C8 and C18 Alkanethiols on the Au(111) Surface

AU Prathima, N.; Harini, M.; Rai, Neeraj; Chandrashekar, R. H.; Ayappa, K. G.; Sampath, S.; Biswas, S. K.

CS Departments of Mechanical Engineering, Chemical Engineering, and Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore, 560012, India

SO Langmuir (2005), 21(6), 2364-2374  
CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 66-3 (Surface Chemistry and Colloids)

AB The thermal stability of short alkanethiol CH<sub>3</sub>(CH<sub>2</sub>)<sub>7</sub>SH (C8) and long C18 self-assembled monolayers (SAMs) is investigated using grazing angle reflection-absorption IR spectroscopy, cyclic voltammetry, and mol. dynamics simulation. We track the disordering of SAM by tilting and gauche defect accumulation with increasing temperature in the 300-440 K range, a range of interest to tribol. Mol. dynamics simulation with both fully covered and partially covered C6, C8, and C18 monolayers brings out the morphol. changes in the SAM, which may be associated with the observed thermal stability characteristics.

The mol. dynamics simulations reveal that short-chain C6 and C8 alkanethiols are more defective at lower temperature than the long-chain C18 alkanethiol. With increasing temperature disorder in the SAM, as reflected in both untilting and gauche defect accumulation, tends to saturate at temps. below 360 K for short-chain SAMs such that any further increase in temperature, until desorption, does not lead to any significant change in conformational order. In contrast the disorder in the long-chain C18 SAM increases monotonically with temperature beyond 360 K. Thus, in a practical range of temperature, the ability of a SAM to retain order with increasing thermal perturbations is governed by the state of disorder prior to heat treatment. This deduction derived from mol. dynamics simulation helps to rationalize the significant difference we have observed exptl. between the thermal response of short- and long-chain thiol mols.

ST thermal stability conformational disorder alkanethiol  
SAM gold  
IT Disorder  
(orientational, surface; thermal stability and  
conformational disorder of alkanethiol SAM on gold)  
IT Self-assembled monolayers  
Thermal stability  
(thermal stability and conformational disorder of alkanethiol  
SAM on gold)  
IT 111-31-9D, 1-Hexanethiol, gold bound 111-88-6D, 1-Octanethiol, gold  
bound 2885-00-9D, 1-Octadecanethiol, gold bound  
(SAM; thermal stability and conformational disorder  
of alkanethiol SAM on gold)  
IT 7440-57-5D, Gold, thiolated  
(thermal stability and conformational disorder of alkanethiol  
SAM on gold)  
OSC.G 31 THERE ARE 31 CAPLUS RECORDS THAT CITE THIS RECORD (31 CITINGS)  
UPOS.G Date last citing reference entered STN: 21 Feb 2011  
OS.G CAPLUS 2011:61284; 2010:1394704; 2010:1183571; 2010:600199; 2010:127662;  
2009:1606753; 2010:152486; 2010:126578; 2010:59137; 2009:845027;  
2009:218589; 2008:1381680; 2008:1173483; 2008:907566;  
2008:859312; 2008:712796; 2008:701393; 2008:497904; 2008:333921;  
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L31 ANSWER 18 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 142:267270 HCA Full-text  
ED Entered STN: 24 Mar 2005  
TI h-BN on Pd(110). A tunable system for self-assembled nanostructures?  
AU Corso, Martina; Greber, Thomas; Osterwalder, Juerg  
CS Physik Institut, Universitaet Zuerich, Zurich, CH-8057, Switz.  
SO Surface Science (2005), 577(2-3), L78-L84  
CODEN: SUSCAS; ISSN: 0039-6028  
PB Elsevier B.V.  
DT Journal  
LA English  
CC 66-3 (Surface Chemistry and Colloids)  
AB A 1 monolayer thick covalent network of hexagonal BN forms on Pd(1 1 0) upon thermal decomposition of borazine (HBNH)<sub>3</sub>. Due to the weak interfacial bonding, the different symmetries of overlayer and substrate, and the lattice mismatch, a variety of rotated domains are created. Several Moire patterns appear in STM images, which can be well explained by simple atomic models. Rings in LEED manifest domain averaging. Non-uniform intensity distributions along these rings measure the abundance of certain domains, depending on particular preparation procedures. The individual Moire domains represent interesting periodic nanostructures that can be imprinted in an adsorbed layer of C<sub>60</sub> mols.  
ST boron nitride adsorption self assembly palladium nanostructure  
IT Nanostructures  
Self-assembled monolayers  
Surface structure  
(self-assembled h-BN nanostructures on Pd(110))  
IT 10043-11-5, Boron nitride, properties  
(self-assembled h-BN nanostructures on Pd(110))  
IT 7440-05-3, Palladium, properties  
(self-assembled h-BN nanostructures on Pd(110))  
OSC.G 26 THERE ARE 26 CAPLUS RECORDS THAT CITE THIS RECORD (26 CITINGS)  
UPOS.G Date last citing reference entered STN: 27 Jun 2011  
OS.G CAPLUS 2011:605363; 2011:351154; 2010:1503659; 2010:1470420;  
2010:1241214; 2010:1116496; 2010:79121; 2009:923841; 2009:568030;  
2009:473321; 2009:392314; 2009:125437; 2009:93723; 2008:1448037;  
2008:1351214; 2008:1061737; 2008:938432; 2008:549412;  
2008:403359; 2008:51033; 2007:1335039; 2007:402853; 2007:272978;  
2007:50937; 2006:966861; 2006:503396  
RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD



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L31 ANSWER 19 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 142:143010 HCA Full-text

ED Entered STN: 10 Feb 2005

TI Surface-Bound Porphyrazines: Controlling Reduction Potentials of Self-Assembled Monolayers through Molecular Proximity/Orientation to a Metal Surface

AU Vesper, Benjamin J.; Salaita, Khalid; Zong, Hong; Mirkin, Chad A.; Barrett, Anthony G. M.; Hoffman, Brian M.

CS Department of Chemistry and Institute for Nanotechnology, Northwestern University, Evanston, IL, 60208, USA

SO Journal of the American Chemical Society (2004), 126(50), 16653-16658

CODEN: JACSAT; ISSN: 0002-7863

PB American Chemical Society

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 22, 28, 66

OS CASREACT 142:143010

AB The authors report the preparation of 2 novel H<sub>2</sub>[pz(An;B<sub>4</sub>-n)] porphyrazines (pzs) which were designed to position themselves quite differently when attached to a surface: one to form a standard self-assembled monolayer (SAM) roughly perpendicular to a surface, the other to lie horizontally along a surface. As the former, the authors synthesized a pz, 1, where one pyrrole group is functionalized with 2 thioethers terminated in mercaptides (SR, R = (CH<sub>2</sub>)<sub>3</sub>CONH(CH<sub>2</sub>)<sub>2</sub>SS-), each protected as a disulfide, and -S-Me is attached to the other pyrrole sites; the latter is a pz, 2, with dialkoxybenzo groups fused to 2 trans-pyrroles of the pz ring, and SR groups are attached to the other pair of pyrroles. Nanostructures of 1 and 2 were successfully patterned on Au surfaces via dip-pen nanolithog., and the predicted mol. orientation of the resulting structures was confirmed by topog. AFM images. The 2 pzs exhibit similar reduction potentials in solution. Both show large shifts in potential upon surface binding, with the magnitude of the shift depending on the proximity/orientation of the pz to the surface. The 1st reduction potential of the vertically aligned 1 shifts by .apprx.+430 mV when incorporated in a binary pz/hexanethiol SAM, while that for 2, which lies flat, shifts by .apprx.+800 mV; the potential thus shifts by .apprx.+370 mV upon taking a given pz that stands atop a 2-legged insulating standoff in a traditional SAM and laying it down. The authors suggest these observed effects can be explained by image-charge energetics, and this is supported by a simple model.

ST surface bound porphyrazine control redn potential self assembled monolayer; gold bound porphyrazine self assembled monolayer redn potential; toluene protected porphyrazine cyclic voltammetry

IT Molecular orientation  
Nanostructures  
(of surface-bound porphyrazines on gold electrode)

IT Cyclic voltammetry  
Reduction, electrochemical  
Reduction potential  
(of surface-bound porphyrazines on gold in solns. containing NaPF<sub>6</sub> and NaClO<sub>4</sub> and comparison with thiotoluene-protected porphyrazines in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT Self-assembled monolayers  
(surface-bound porphyrazines: controlling reduction potentials of self-assembled monolayers through mol. proximity/orientation to a metal surface)

IT 7440-57-5D, Gold, thiolated 827039-27-0D, gold bound 827039-28-1D, gold bound  
(cyclic voltammetry in NaPF<sub>6</sub> and NaClO<sub>4</sub> solns. and controlling reduction potentials of self-assembled monolayers through mol. proximity/orientation to metal surface)

IT 7440-57-5, Gold, uses  
(cyclic voltammetry of surface-bound porphyrazines on gold in solns. containing NaPF<sub>6</sub> and NaClO<sub>4</sub> and comparison with thiotoluene-protected porphyrazines in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT 3109-63-5, Tetrabutylammonium hexafluorophosphate 7601-89-0  
21324-39-0, Sodium hexafluorophosphate  
(cyclic voltammetry of surface-bound porphyrazines on gold in solns. containing NaPF<sub>6</sub> and NaClO<sub>4</sub> and comparison with thiotoluene-protected porphyrazines in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT 827039-27-0 827039-28-1  
(electrochem. reduction in CH<sub>2</sub>Cl<sub>2</sub> and comparison with SAM on gold)

IT 827039-35-0 827039-36-1  
(electrochem. reductive formation in CH<sub>2</sub>Cl<sub>2</sub> and comparison with SAM on gold)

IT 827039-33-8P 827039-34-9P  
(preparation and cyclic voltammetry in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT 6066-82-6  
(preparation and cyclic voltammetry in CH<sub>2</sub>Cl<sub>2</sub> containing Bu<sub>4</sub>NPF<sub>6</sub>)

IT 325787-38-0P  
(preparation and hydrolysis of)

IT 827039-29-2P  
(preparation and hydrolysis of)

IT 756754-59-3P  
(preparation and reaction in protection of porphyrazines)

IT 325787-41-5P 827039-30-5P  
(preparation and reaction with disulfide amine protecting group)

IT 325787-35-7  
(reaction with dicyanobis(methylthio)ethylene)

IT 7373-02-6, Bis(methylthio)maleonitrile 201140-20-7  
(reaction with dimethyldicyanodithiadodecenedioate)

IT 106-45-6, 4-Methylbenzenethiol  
(reaction with mercaptoethylamine)

IT 60-23-1, 2-Mercaptoethylamine  
(reaction with methylbenzenethiol)

OSC.G 27 THERE ARE 27 CAPLUS RECORDS THAT CITE THIS RECORD (28 CITINGS)

UPOS.G Date last citing reference entered STN: 25 Aug 2011

OS.G CAPLUS 2011:1031150; 2011:571642; 2011:385134; 2011:184348; 2010:445151;  
2010:206863; 2010:160848; 2010:159883; 2009:1284663; 2009:999850;  
2009:507059; 2009:178043; 2008:507772; 2008:498288; 2007:895423;  
2007:887729; 2007:354282; 2007:271978; 2007:127838; 2007:108524;

2007:84523; 2006:1250230; 2006:1159888; 2006:860382; 2006:777896;  
2006:165851; 2005:417678

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L31 ANSWER 20 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 142:80483 HCA Full-text  
ED Entered STN: 20 Jan 2005  
TI A thermal stability study of alkane and aromatic  
thiolate self-assembled monolayers on copper  
surfaces

AU Carbonell, L.; Whelan, C. M.; Kinsella, M.; Maex, K.  
 CS IMEC vzw, Louvain, B-3001, Belg.  
 SO Superlattices and Microstructures (2004), 36(1-3), 149-160  
 CODEN: SUMIEK; ISSN: 0749-6036  
 PB Elsevier B.V.  
 DT Journal  
 LA English  
 CC 66-3 (Surface Chemistry and Colloids)  
 AB The thermal stability of 1-decanethiol (C10) and benzenethiol (BT) self-assembled monolayers (SAMs) on metallic and oxidized Cu surfaces was investigated by thermal desorption spectrometry. High quality C10 and BT SAMs exhibit low thermal stabilities on clean Cu surfaces with a maximum in decomposition occurring between 100-150°. The decomposition of SAMs follows different mechanisms. For the alkanethiol, a direct interaction between the alkyl group of the thiolate and the metallic Cu surface is the dominant pathway for the C-S bond scission. The head group desorbs as oxidized sulfur and this is followed by the desorption of the alkyl fragments of the chain adsorbed on the clean copper surface. In the case of benzenethiol, a simultaneous desorption of the head group as oxidized S and the benzene group occurs. SAM formation on the oxidized Cu surface results in complete removal and/or reduction of the CuO layer. Higher SAM surface coverages on the resulting Cu/Cu2O surface result from the enhanced surface roughness of the substrate. The decomposition mechanisms and thermal stabilities of the C10 and BT SAMs are dependent on the oxidation state of the underlying substrate and the chemical nature of the chain.  
 ST decanethiol benzenethiol adsorption disson copper surface thermal stability  
 IT Dissociative chemisorption  
     Self-assembled monolayers  
     Surface roughness  
     Thermal stability  
         (thermal stability 1-decanethiol and benzenethiol self-assembled monolayers on Cu surfaces)  
 IT 108-98-5, Benzenethiol, properties 143-10-2, 1-Decanethiol (thermal stability 1-decanethiol and benzenethiol self-assembled monolayers on Cu surfaces)  
 IT 71-43-2, Benzene, formation (nonpreparative) 1317-39-1, Cuprous oxide, formation (nonpreparative) 7446-09-5, Sulfur dioxide, formation (nonpreparative)  
     (thermal stability 1-decanethiol and benzenethiol self-assembled monolayers on Cu surfaces)  
 IT 7440-50-8, Copper, properties (thermal stability 1-decanethiol and benzenethiol self-assembled monolayers on Cu surfaces)  
 OSC.G 17 THERE ARE 17 CAPLUS RECORDS THAT CITE THIS RECORD (17 CITINGS)  
 UPOS.G Date last citing reference entered STN: 05 Aug 2011  
 OS.G CAPLUS 2011:769503; 2011:54032; 2010:1455091; 2010:1312140; 2010:1321888; 2010:928006; 2010:660251; 2010:127098; 2009:1182569; 2009:1177171; 2008:1078918; 2008:602087; 2007:1287571; 2007:115209; 2007:108457; 2006:564752; 2006:64796  
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L31 ANSWER 21 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 142:11989 HCA Full-text  
ED Entered STN: 23 Dec 2004  
TI Thermal stability of octadecyltrichlorosilane self-assembled on a polycrystalline aluminium surface  
AU Khatri, Om Prakash; Biswas, S. K.  
CS Department of Mechanical Engineering, Indian Institute of Science, Bangalore, 560 012, India  
SO Surface Science (2004), 572(2-3), 228-238  
CODEN: SUSCAS; ISSN: 0039-6028  
PB Elsevier B.V.  
DT Journal  
LA English  
CC 66-3 (Surface Chemistry and Colloids)  
Section cross-reference(s): 56  
AB In search for a good boundary lubricant additive for aluminum substrates we investigate the mol. disorder retained in a monolayer self-assembled on an Al surface subjected to thermal cycling. Our target mol. is octadecyltrichlorosilane (C18H37SiCl3, OTS) but we also study octadecanoic acid (C17H35COOH) to explore the effect of changing the mol. head group. The 2 mols. have the same alkyl back bone, same terminal group but different head groups; -SiCl3 and -COOH resp., both however adhere to the Al substrate through O atoms by chemisorption bonding. We conduct the study using grazing angle Fourier transform IR spectroscopy. OTS which is able to polymerize into a 2D network when self-assembled on the Al surface is able to retain partial mol. order when subjected to thermal cycles. In contrast a self-assembled monolayer (SAM) of the octadecanoic acid, which does not polymerize on the Al surface, become totally disordered when heat treated.  
ST octadecyltrichlorosilane adsorption self assembly aluminum surface  
thermal stability  
IT Diffusion  
(surface; thermal stability of octadecyltrichlorosilane self-assembled on polycryst. Al surface)  
IT Lubrication  
Self-assembled monolayers  
Thermal cycling  
Thermal stability  
(thermal stability of octadecyltrichlorosilane self-assembled on polycryst. Al surface)  
IT 57-11-4, Octadecanoic acid, properties 112-04-9, Octadecyltrichlorosilane

(thermal stability of octadecyltrichlorosilane self-assembled on polycryst. Al surface)

IT 7429-90-5, Aluminum, properties  
(thermal stability of octadecyltrichlorosilane self-assembled on polycryst. Al surface)

OSC.G 13 THERE ARE 13 CAPLUS RECORDS THAT CITE THIS RECORD (13 CITINGS)

UPOS.G Date last citing reference entered STN: 14 Jul 2011

OS.G CAPLUS 2011:709225; 2010:600199; 2009:280359; 2008:1381680;  
2008:1173483; 2008:200560; 2007:1167995; 2007:1138559;  
2007:50475; 2006:1023280; 2005:1318016; 2005:1256999;  
2005:1215582

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L31 ANSWER 22 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 141:256245 HCA Full-text

ED Entered STN: 07 Oct 2004

TI Solid-supported biomimetic membranes with tailored lipopolymer tethers

AU Foertig, Anton; Jordan, Rainer; Graf, Karlheinz; Schiavon, Giovanni; Purrucker, Oliver; Tanaka, Motomu

CS Lehrstuhl fuer Makromolekulare Stoffe, TU Muenchen, Garching, 85747, Germany

SO Macromolecular Symposia (2004), 210(Reactive Polymers 2003), 329-338

CODEN: MSYMEC; ISSN: 1022-1360

PB Wiley-VCH Verlag GmbH & Co. KGaA  
DT Journal  
LA English  
CC 6-6 (General Biochemistry)

Section cross-reference(s): 35, 66

- AB Stable lipid membranes with controlled substrate-membrane spacing can be prepared using well-defined lipopolymers as a tether. Based on the living cationic ring-opening polymerization of 2-methyl- or 2-ethyl-2-oxazoline, lipopolymers can be synthesized bearing a lipid head group as well as a silanol reactive coupling end group. Using a "grafting onto" procedure these polymers can form dense, brush like monolayers, whose layered structures can be obtained by x-ray reflectivity measurements. By transfer of a pre-organized monolayer that is followed by vesicle fusion, stable polymer supported lipid membranes can be prepared. The substrate-membrane spacing can be controlled via the d.p., while the lateral diffusion of lipids within the membrane depends on the d. of polymer tethers. Preliminary expts. implied that the membrane with long (N = 40) polymer tethers could reside trans-membrane receptors homogeneously, suggesting a large potential of this strategy.
- ST solid supported biomimetic membrane lipopolymer tether; alkyl oxazoline lipopolymer surface tethered biomimetic membrane
- IT Membrane, biological  
(bilayer, solid-supported; preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT Receptors  
(incorporation into solid-supported membranes; preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT Self-assembled monolayers  
(lipopolymer; preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT Alcohols, preparation  
(long-chain, polymer conjugates; preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT Proteins  
(membrane, incorporation into solid-supported membranes; preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT Diglycerides  
(polymer conjugates; preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT Immobilization, molecular or cellular  
(preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT 6753-56-6DP, 1-Stearyl-2-oleoyl-phosphatidylcholine, surface immobilized  
(bilayer membrane; preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT 754991-05-4DP, immobilized on silicon surface 754991-07-6DP, immobilized on silicon surface 754991-08-7DP, immobilized on silicon surface 754991-10-1DP, immobilized on silicon surface 754991-11-2DP, immobilized on silicon surface  
(preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)
- IT 7440-21-3DP, Silicon, conjugate with lipopolymer  
(surface; preparation of solid-supported biomimetic membranes using lipopolymer tethers grafted onto silicon surface)

OSC.G 4 THERE ARE 4 CAPLUS RECORDS THAT CITE THIS RECORD (4 CITINGS)  
UPOS.G Date last citing reference entered STN: 11 Apr 2011  
OS.G CAPLUS 2011:291019; 2007:1348413; 2007:343443; 2006:175154  
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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L31 ANSWER 23 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 140:277640 HCA Full-text

ED Entered STN: 15 Apr 2004

TI Electrochemical studies of thiol self-assembled  
monolayers at a heated gold-wire microelectrode

AU Wang, Jun; Gruendler, Peter

CS Department of Chemistry, Rostock University, Rostock, 18051, Germany

SO Electroanalysis (2003), 15(22), 1756-1761

CODEN: ELANEU; ISSN: 1040-0397

PB Wiley-VCH Verlag GmbH & Co. KGaA

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 66

AB Mercaptooundecanoic acid (MUA) and glutathione (GSH) self-assembled monolayers were prepared on Au-wire microelectrode. Cyclic voltammetry was used to study the influence of temperature on electrochem. behaviors of Fe(CN)<sub>6</sub><sup>3-/4-</sup> and Ru(NH<sub>3</sub>)<sub>6</sub><sup>3+/2+</sup> at these SAMs modified electrodes in aqueous solution. Temperature shows great influence on electron transfer (ET) and mass transport (MT) for the two SAMs modified electrodes and the influence of temperature depends on the charge properties of the redox couples and terminal groups of SAMs and the structure of the monolayer on Au surface. The temperature can greatly increase MT rate of Fe(CN)<sub>6</sub><sup>3-/4-</sup> at both MUA and GSH modified electrodes. However, the increased MT rate does not have any effect on the CV's for Fe(CN)<sub>6</sub><sup>3-/4-</sup>/MUA system. For Ru(NH<sub>3</sub>)<sub>6</sub><sup>3+/2+</sup>, temperature can greatly improve the electrochem. reaction in both MUA and GSH modified electrodes, which is ascribed to temperature-induced diffusion and convection and the electrostatic interaction between Ru(NH<sub>3</sub>)<sub>6</sub><sup>3+/2+</sup> and neg. charged carboxyl groups on the electrode surface.

ST electrochem reaction thiol self assembled  
monolayer; heated gold wire microelectrode  
mercaptooundecanoic acid glutathione SAM; cyanoferrate ruthenium  
amine complex electron transfer

IT Redox reaction  
(electrochem.; thiol self-assembled  
monolayers at heated gold-wire microelectrode and  
cyclic voltammetry of redox couples on)



IT Cyclic voltammetry  
Diffusion  
Electron transfer  
Mass transfer  
Self-assembled monolayers  
(thiol self-assembled monolayers at  
heated gold-wire microelectrode and cyclic  
voltammetry of redox couples on)

IT 13408-62-3, Ferricyanide 13408-63-4, Ferrocyanide 18943-33-4,  
Hexaammine ruthenium(3+) 19052-44-9, Hexaammine ruthenium(2+)  
(thiol self-assembled monolayers at  
heated gold-wire microelectrode and cyclic  
voltammetry of redox couples on)

IT 7440-57-5, Gold, uses  
(thiol self-assembled monolayers at  
heated gold-wire microelectrode and cyclic  
voltammetry of redox couples on)

IT 70-18-8, Glutathione, uses 192082-40-9, Mercaptoundecanoic acid  
(thiol self-assembled monolayers at  
heated gold-wire microelectrode and cyclic  
voltammetry of redox couples on)

OSC.G 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)

UPOS.G Date last citing reference entered STN: 05 Nov 2010

OS.G CAPLUS 2010:1346658; 2010:1259730; 2010:685522; 2009:926736;  
2007:118248; 2006:625618; 2005:36725

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- L31 ANSWER 24 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 140:242523 HCA Full-text  
ED Entered STN: 01 Apr 2004  
TI Corrosion inhibition by self-assembled  
monolayers for enhanced wire bonding on Cu surfaces  
AU Whelan, Caroline M.; Kinsella, Michael; Carbonell, Laureen; Ho, Hong Meng;  
Maex, Karen  
CS IMEC, Louvain, B-3001, Belg.  
SO Microelectronic Engineering (2003), 70(2-4), 551-557  
CODEN: MIENEF; ISSN: 0167-9317  
PB Elsevier Science B.V.  
DT Journal  
LA English  
CC 72-2 (Electrochemistry)  
Section cross-reference(s): 23, 25, 66  
AB Corrosion inhibition by thiol-derived self-assembled monolayers (SAMs) on Cu  
surfaces has been characterized using contact angle measurements, XPS,  
voltammetry, and thermal desorption spectroscopy. Factors influencing SAM  
formation were investigated to develop an optimized wafer level process. XPS  
confirms the formation of thiolate species bonded to a mixed metallic Cu and  
cuprous oxide surface. Stability studies as a function of temperature and  
electrochem. potential demonstrate promising passivation properties. The  
feasibility of exploiting SAMs in microelectronics applications was  
demonstrated by the enhancement of Cu wire bonding onto Cu bond pads.  
ST thiols self assembled monolayers copper  
wires bonding corrosion inhibition  
IT Corrosion  
Self-assembled monolayers  
Wires  
(corrosion inhibition by self-assembled  
monolayers for enhanced wire bonding on Cu surfaces)  
IT Thiols, uses  
(corrosion inhibition by self-assembled  
monolayers for enhanced wire bonding on Cu surfaces)  
IT Interconnections, electric  
(corrosion inhibition by self-assembled  
monolayers for enhanced wire bonding on Cu surfaces  
in fabrication of)  
IT Corrosion inhibitors  
(corrosion inhibition by thiols self-assembled  
monolayers for copper surfaces)  
IT Cyclic voltammetry  
(of copper in aqueous NaOH solution in presence of decanethiol and  
benzenethiol)  
IT X-ray photoelectron spectra  
(of copper surface before and after immersion in solution of  
decanethiol and benzenethiol in methanol)  
IT Desorption  
(thermal; of thiols self-assembled  
monolayers from copper surface)  
IT 67-56-1, Methanol, uses  
(XPS spectra of copper surface before and after immersion in  
solution of decanethiol and benzenethiol in methanol)  
IT 7440-50-8, Copper, miscellaneous  
(corrosion inhibition by self-assembled

monolayers for enhanced wire bonding on Cu surfaces)  
IT 108-98-5, Benzenethiol, uses 143-10-2, 1-Decanethiol  
(corrosion inhibition by self-assembled  
monolayers for enhanced wire bonding on Cu surfaces)  
OSC.G 49 THERE ARE 49 CAPLUS RECORDS THAT CITE THIS RECORD (49 CITINGS)  
UPOS.G Date last citing reference entered STN: 02 Aug 2011  
OS.G CAPLUS 2011:886552; 2011:352994; 2011:306968; 2011:135164; 2010:924907;  
2010:980973; 2010:865619; 2010:616775; 2010:516341; 2010:508757;  
2010:260070; 2010:193077; 2010:127751; 2010:127098; 2010:191372;  
2009:1516194; 2009:1502621; 2009:1058902; 2009:1065841;  
2009:1065777; 2009:810971; 2009:724852; 2009:280351;  
2008:1078918; 2008:1021595; 2008:925519; 2008:29882; 2008:19957;  
2007:1200266; 2007:1078491; 2007:1039476; 2007:860743;  
2007:70611; 2007:70610; 2006:1265964; 2006:1017083; 2006:1011373;  
2006:595135; 2006:267512; 2006:58952; 2005:1152417; 2005:592478;  
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L31 ANSWER 25 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 140:241672 HCA [Full-text](#)

ED Entered STN: 01 Apr 2004

TI Thermal Stability of Perfluoroalkyl Silane Self-Assembled on a Polycrystalline Aluminum Surface

AU Devaprakasam, D.; Sampath, S.; Biswas, S. K.

CS Department of Mechanical Engineering and Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore, 560012, India

SO Langmuir (2004), 20(4), 1329-1334

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

Section cross-reference(s): 56

AB Thermal stability behavior of 1H,1H,2H,2H-perfluorooctyl trichlorosilane self-assembled on Al substrates is characterized using a grazing-angle FTIR spectrometer, Fourier transform-Raman spectroscopy, and contact angle measurements. The self-assembled monolayer (SAM) is heated quasi-statically from room temperature to >633 K with a heating rate of 1 K/s. Variations in peak frequencies, integrated areas of intensities of sym. and antisym. CF<sub>2</sub> stretches, and the relative tilt angle of the SAM are reported. The conformational order in the SAM is not disrupted because of thermal cycling when the peak temperature is <423 K. When the peak temperature is 423-603 K,

the cycling results in only a partial retention of the original order. When the peak temperature is >603 K, the process is completely irreversible. Surface-enhanced Raman spectroscopy and contact angle measurements support these observations. The authors confirm these trends for a longer chain (1H,1H,2H,2H-perfluorodecyl trichlorosilane) mol. of the same family using the same techniques. The possible reasons for the changes in light of the tilting-untilting and uncoiling-coiling of the helical silane monolayer are discussed.

ST thermal stability perfluoroalkyl silane self  
assembled monolayer aluminum surface

IT SERS (Raman scattering)  
(measured to study thermal stability of perfluoroalkyl silane  
self-assembled on polycryst. aluminum surface)

IT IR spectra  
(mid-IR; measured to study thermal stability of  
perfluoroalkyl silane self-assembled on polycryst. aluminum  
surface)

IT Lubricants  
Self-assembled monolayers  
(thermal stability of perfluoroalkyl silane self-  
assembled on polycryst. aluminum surface)

IT 7429-90-5, Aluminum, properties 78560-44-8, 1H,1H,2H,2H-Perfluorodecyl  
trichlorosilane 78560-45-9  
(thermal stability of perfluoroalkyl silane self-assembled on  
polycryst. aluminum surface)

OSC.G 24 THERE ARE 24 CAPLUS RECORDS THAT CITE THIS RECORD (24 CITINGS)

UPOS.G Date last citing reference entered STN: 09 Aug 2011

OS.G CAPLUS 2011:805411; 2011:91409; 2010:1554855; 2010:1383175; 2010:671402;  
2010:310455; 2010:282118; 2009:1605318; 2009:1212793;  
2009:1177045; 2008:1173483; 2008:680303; 2007:482239;  
2006:932741; 2006:354848; 2005:1318016; 2005:1256999;  
2005:1215582; 2005:1156001; 2005:1120391; 2005:648095;  
2005:226323; 2005:27026; 2004:940259

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L31 ANSWER 26 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 140:208082 HCA Full-text

ED Entered STN: 18 Mar 2004

TI Direct gold and copper wires bonding on copper

AU Ho, Hong Meng; Lam, Wai; Stoukatch, Serguei; Ratchev, Petar; Vath, Charles J.; Beyne, Eric

CS IMEC, Louvain, B-3001, Belg.

SO Microelectronics Reliability (2003), 43(6), 913-923

CODEN: MCRLAS; ISSN: 0026-2714

PB Elsevier Science Ltd.

DT Journal

LA English

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 48, 56, 66

AB The key to bonding to Cu die is to ensure bond pad cleanliness and min. oxidation during wire bonding process. This was achieved by applying a organic coating layer to protect the Cu bond pad from oxidation. During the wire bonding process, the organic coating layer is removed and a metal to metal weld is formed. This organic layer is a self-assembled monolayer. Both Au and Cu wires were wire-bonded successfully to the Cu die even without prior plasma cleaning. The ball diameter for both wires are 60 µm on a 100 µm fine pitch bond pad. The effectiveness of the protection of the organic coating layer starts from the wafer dicing process up to the wire bonding process and is able to protect the bond pad for an extended period after the 1st round of wire bond process. Oxidization of Cu bond pad at different packaging processing stages, dicing and die attach curing, were explored. The ball shear strength for both Au and Cu ball bonds achieved are 5 and 6 g/mil<sup>2</sup> resp. When subjected to high temperature storage test at 150°, the ball bonds formed by both Au and Cu wire bond on the organic coated Cu bondpad are thermally stable in ball shear strength up to a period of 1440 h. The encapsulated daisy chain test vehicle with both Au and Cu wires bonding have passed 1000 cycles of thermal cycling test (-65 to 150°). Orientation imaging microscopy technique is able to detect early levels of oxidation on the Cu bond pad. This is extremely important in characterization of the bondability of the Cu bond pad surface.

ST gold copper wire welding self assembly protection layer

IT Oxidation

(copper; direct gold and copper wires bonding on copper dies and copper oxidation)

IT Dies

Electric contacts

Welding of metals

Wires

(direct gold and copper wires bonding on copper dies)

IT Oxidation kinetics

(direct gold and copper wires bonding on copper dies and copper oxidation)

IT Passivation

(direct gold and copper wires bonding on copper dies with SAM thiol passivation)

IT Thiols, processes

(direct gold and copper wires bonding on copper dies with SAM thiol passivation)

IT Self-assembly

(for direct gold and copper wires bonding on copper dies)

IT Shear strength

Thermal cycling  
Thermal stability  
(of direct gold and copper wires bonding on copper dies)

IT Self-assembled monolayers  
(protective coating; for direct gold and copper wires bonding on copper dies)

IT 7440-57-5, Gold, properties  
(direct gold and copper wires bonding on copper dies)

IT 7440-50-8, Copper, properties  
(direct gold and copper wires bonding on copper dies and copper oxidation)

OSC.G 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)

UPOS.G Date last citing reference entered STN: 04 Feb 2010

OS.G CAPLUS 2009:1516194; 2009:1182569; 2009:436350; 2008:1175988;  
2008:1083235; 2008:682694; 2008:437133; 2008:288446; 2007:477616;  
2006:1220880

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L31 ANSWER 27 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 140:9573 HCA [Full-text](#)

ED Entered STN: 25 Dec 2003

TI Molecular Recognition at Model Organic Interfaces: Electrochemical Discrimination Using Self-Assembled Monolayers (SAMs) Modified via the Fusion of Phospholipid Vesicles

AU Twardowski, Mariusz; Nuzzo, Ralph G.

CS Department of Chemistry and the Frederick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, 61801, USA

SO Langmuir (2003), 19(23), 9781-9791

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 29, 66

AB Supported lipid layers were formed via the fusion of large unilamellar vesicles of 1,2-dimyristoyl-sn-glycero-3-phosphocholine (DMPC) to mixed self-assembled monolayers (SAMs) on gold comprised of ferrocene-functionalized hexadecanethiol chains (FcCO2C16SH) diluted in either hexadecanethiol (C16SH) or 1-hydroxylhexadecanethiol (HOC16SH). For the former case, the DMPC adsorbs predominantly as a single layer to form a hybrid bilayer membrane (HBM). The structures obtained in this way were characterized by methods that include electrochem. measurements, ellipsometry, and surface plasmon resonance (SPR).

Cyclic voltammetry (CV) reveals that the electrochem. of the ferrocene groups present in the SAM is strongly perturbed by the adlayer structure. The electrochem. behaviors of the ferrocene groups incorporated into a mixed SAM prepared using the more polar hydroxyl terminated thiol are quite different. The adsorption of DMPC via vesicle fusion in this case leads to the adsorption of bilayer assemblies of the lipid on top of the SAM. The coverages of the DMPC suggested by the SPR data lie between the values expected for fusion processes depositing either one or two bilayers of the lipid on top of the SAM. The electrochem. properties of the ferrocene moieties present in this structure were found to be largely unperturbed following the DMPC adsorption. Subsequent studies revealed that the adsorbed DMPC strongly influences the interactions of the tethered ferrocene groups with secondary aqueous mol. redox probes present in the electrolyte solution; permselective properties are seen in this adlayer structure. The varying degrees of electrochem. rectification seen in CV surveys demonstrated that probes such as  $K_4Fe(CN)_6$ ,  $C_5H_5Fe(C_5H_4CH_2N(CH_3)_3)PF_6$ , and  $Ru(NH_3)_6Cl_3$  appear to penetrate the DMPC layer while species such as  $C_5H_5Fe[C_5H_4CH_2N+H(CH_3)_2]$ ,  $C_5H_5Fe(C_5H_4CH_2OH)$ , and  $C_5H_5Fe(C_5H_4COO^-)$  do not. We believe that mol. scale defect structures present in the adsorbed DMPC layers confer the mol. discrimination properties seen. A qual. structural model is proposed.

- ST mol recognition electrochem discrimination self assembled monolayers thiols phospholipids
- IT Molecular recognition
  - Self-assembled monolayers
    - (electrochem. discrimination using self-assembled monolayers modified via fusion of phospholipid vesicles)
- IT Phospholipids, uses
  - (electrochem. discrimination using self-assembled monolayers modified via fusion of phospholipid vesicles)
- IT Simulation and Modeling
  - (mol. recognition at model organic interfaces of 1,2-dimyristoyl-sn-glycero-3-phosphocholine (DMPC) to mixed self-assembled monolayers (SAMs) on gold comprised of ferrocene-functionalized hexadecanethiol chains)
- IT Interface
  - (mol. recognition at model organic interfaces: electrochem. discrimination using self-assembled monolayers modified via fusion of phospholipid vesicles)
- IT Thickness
  - (of film comprising phospholipid on gold electrode modified with self-assembled monolayer of ferrocene-functionalized hexadecanethiol chains)
- IT Cyclic voltammetry
  - (of gold electrode modified with self-assembled monolayer with and without phospholipid)
- IT Adsorption
  - (of phospholipid on gold electrode modified with self-assembled monolayer of ferrocene-functionalized hexadecanethiol chains)
- IT Electron transfer
  - (through film comprising phospholipid on gold electrode modified with self-assembled monolayer of ferrocene-functionalized hexadecanethiol chains)
- IT 7440-57-5, Gold, uses
  - (cyclic voltammetry of gold electrode modified with self-assembled monolayer with and without phospholipid)

IT 18194-24-6, 1,2-Dimyristoyl-sn-glycero-3-phosphocholine  
(electrochem. discrimination using self-assembled monolayers modified via fusion of phospholipid vesicles)

IT 102-54-5, Ferrocene 2917-26-2, Hexadecanethiol 114896-32-1  
(mol. recognition at model organic interfaces of 1,2-dimyristoyl-sn-glycero-3-phosphocholine (DMPC) to mixed self-assembled monolayers (SAMs)  
on gold comprised of ferrocene-functionalized hexadecanethiol chains)

OSC.G 27 THERE ARE 27 CAPLUS RECORDS THAT CITE THIS RECORD (28 CITINGS)

UPOS.G Date last citing reference entered STN: 04 Jul 2011

OS.G CAPLUS 2011:810578; 2011:39561; 2010:1262456; 2010:1136314;  
2009:1021400; 2009:481280; 2009:721849; 2009:567634; 2009:507056;  
2009:137017; 2008:1281795; 2008:1135331; 2008:835600;  
2008:680829; 2008:275977; 2008:145495; 2007:393439; 2007:216825;  
2006:1143380; 2006:104703; 2005:327745; 2005:262209; 2005:184342;  
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TI New Insights for Self-Assembled Monolayers

of Organothiols on Au(111) Revealed by Scanning Tunneling Microscopy

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CS Department of Chemistry, University of California, Davis, CA, 95616, USA

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AB In the past decade, scanning tunneling microscopy (STM) has revealed new information regarding self-assembled monolayers (SAMs) of organothiols on Au(111) at the mol. level. The periodicity, defects, morphol., and various phases during the self-assembly process have been visualized with unprecedented detail. Using STM under ultrahigh vacuum, new insights regarding SAMs have been revealed from the perspective of potential applications in mol. devices. This article focuses on a mol.-level understanding of the formation of adatom and vacancy islands and reveals how the structure is impacted by introducing aromatic termini. The thermal stability and thermally induced structural evolution of SAMs are monitored in situ. The behavior of alkanethiol mol. under local elec. field and tunneling current are studied with mol. resolution Mol.-level insight regarding neg. differential resistance of SAMs is also discussed.

ST thiol self assembled monolayer gold

surface structure STM

IT Desorption

(current-induced; self-assembled monolayers of organothiols on Au(111) studied by scanning tunneling microscopy)

IT Chemical chains  
 Crystal vacancies  
 Electric current-potential relationship  
 Electric field effects  
 Melting point  
 Negative resistance  
 Self-assembled monolayers  
 Surface structure  
 Thermal stability  
 Threshold potential  
 Tunneling current  
 (self-assembled monolayers of organothiols on Au(111) studied by scanning tunneling microscopy)

IT Thiols, properties  
 (self-assembled monolayers of organothiols on Au(111) studied by scanning tunneling microscopy)

IT 7440-57-5, Gold, processes  
 (self-assembled monolayers of organothiols on Au(111) studied by scanning tunneling microscopy)

IT 100-53-8, Phenylmethanethiol 108-98-5, Benzenethiol, properties  
 111-31-9, 1-Hexanethiol 111-88-6, 1-Octanethiol 112-55-0,  
 1-Dodecanethiol 143-10-2, 1-Decanethiol 4410-99-5, 2-Phenylethanethiol  
 21345-09-5, 4-Chloro-4'-mercaptobiphenyl 24734-68-7,  
 3-Phenylpropanethiol 174844-47-4  
 (self-assembled monolayers of organothiols on Au(111) studied by scanning tunneling microscopy)

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TI Friction and Molecular Order of Alkanethiol Self-Assembled Monolayers on Au(111) at Elevated Temperatures Measured by Atomic Force Microscopy

AU Yang, Xinju; Perry, Scott S.

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SO Langmuir (2003), 19(15), 6135-6139

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 66-3 (Surface Chemistry and Colloids)

AB The influence of temperature on the frictional properties and mol. structure of hexadecanethiol self-assembled monolayers (SAMs) adsorbed on gold has been measured by atomic force microscopy (AFM) in a vacuum environment. The frictional response of hexadecane thiol films decreases significantly when the as-deposited SAM film is heated from room temperature to 330 K, with a corresponding increase in surface order. The changes observed during the first heat treatment are irreversible, with the room-temperature frictional response lowered by approx. a factor of 4. However, subsequent heating cycles produce a reversible change in interfacial friction for temps. up to 350 K, with interfacial friction increasing with increasing temperature. Further heating the SAM film above 370 K produces a significant and irreversible increase in friction. At 400 K, the lattice-resolved structure of the Au(111) surface is observed, indicating the instability and initial stages of desorption of the alkanethiol film at this temperature. Following surface anneals to 500 K, only small three-dimensional islands of residual thiol are observed in large-scale topog. images and the frictional properties largely reflect those of bare gold. The reversible increase in the frictional properties of the hexadecanethiol film with increasing temperature is ascribed to a decrease in the mol. order and the effective d. of the film. Above the temperature threshold for film damage, the irreversible increase in frictional

response is ascribed to energy being dissipated through ploughing and displacement of the film.

ST friction mol orientation hexadecanethiol SAM gold temp AFM

IT Friction

Molecular orientation

Self-assembled monolayers

Surface structure

(friction and mol. order of hexadecanethiol SAM on Au at elevated temperature)

IT Temperature

(high; friction and mol. order of hexadecanethiol SAM on Au at elevated temperature)

IT 2917-26-2D, Hexadecanethiol, gold bound 7440-57-5D, Gold, thiolated (friction and mol. order of hexadecanethiol SAM on Au at elevated temperature)

OSC.G 36 THERE ARE 36 CAPLUS RECORDS THAT CITE THIS RECORD (36 CITINGS)

UPOS.G Date last citing reference entered STN: 15 Aug 2011

OS.G CAPLUS 2011:951378; 2011:896596; 2011:844864; 2011:480569; 2011:392743; 2010:1511483; 2010:372440; 2009:1361850; 2009:573719; 2009:721858; 2009:554441; 2008:1442050; 2008:1091791; 2008:318312; 2008:26902; 2007:1078320; 2007:1065316; 2007:973343; 2007:785260; 2007:570560; 2007:546095; 2007:523897; 2007:199905; 2006:1359428; 2006:1042556; 2006:1017897; 2006:287764; 2005:1318016; 2005:1256999; 2005:1215582; 2005:1181095; 2005:954532; 2005:642214; 2005:262209; 2004:673612; 2004:194068

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L31 ANSWER 30 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 139:106885 HCA Full-text

ED Entered STN: 07 Aug 2003

TI Self-Assembled Monolayers of

ω-(3-Thienyl)alkanethiols on Gold

AU Ahn, Heejoon; Kim, Myunghwan; Sandman, Daniel J.; Whitten, James E.

CS Department of Chemistry and Center for Advanced Materials, University of Massachusetts Lowell, Lowell, MA, 01854-5047, USA

SO Langmuir (2003), 19(13), 5303-5310

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal  
 LA English  
 CC 66-3 (Surface Chemistry and Colloids)  
 Section cross-reference(s): 78

AB Thiophene-containing alkanethiols, Th-(CH<sub>2</sub>)<sub>n</sub>-SH (Th = 3-thiophene) with n = 2, 6, and 12, have been synthesized and self-assembled onto gold-coated Si(111) wafers. The properties of the monolayers have been compared with those of methyl-terminated self-assembled monolayers (SAMs) having the same number of methylene units. X-ray and UV photoelectron spectroscopies (XPS and UPS) demonstrate formation of surface thiolate bonds and assembly with the thiophene rings at the periphery of the monolayers. Dynamic contact angle measurements using water and hexadecane probe liqs. are consistent with this conclusion and, particularly in the case of 12-(3-thienyl)dodecanethiol, indicate a densely packed, well-ordered monolayer. Ellipsometry measurements yield thickness values of 6.7, 10.7, and 17.9 Å for n = 2, 6, and 12, resp. Assuming the alkyl chains are in a fully extended all-trans conformation, these data indicate tilt angles of 42, 41, and 35°, resp. Quartz crystal microbalance measurements demonstrate that the thienyl-terminated alkanethiol monolayers have similar packing densities compared to methyl-terminated SAMs of similar lengths. Thermal stability measurements using XPS and UPS show that the thienyl-terminated SAMs are stable to at least 100 °C but desorb/decompose on heating to 150 °C.

ST surface structure self assembled  
 monolayer thienyl alkanethiol gold

IT Self-assembled monolayers  
 Surface structure  
 Thickness  
 (surface structure and thickness of SAMs of thienyl alkanethiols on gold)

IT 7440-57-5D, Gold, thiolated 65062-26-2D, 3-Thiopheneethanethiol, gold bound 558471-92-4D, 3-Thiophenehexanethiol, gold bound 558471-93-5D, 3-Thiophenedodecanethiol, gold bound  
 (surface structure and thickness of SAMs of thienyl alkanethiols on gold)

IT 107-03-9D, 1-Propanethiol, gold bound 1639-09-4D, 1-Heptanethiol, gold bound 19484-26-5D, 1-Tridecanethiol, gold bound  
 (to study surface structure and thickness of SAMs of thienyl alkanethiols on gold)

OSC.G 20 THERE ARE 20 CAPLUS RECORDS THAT CITE THIS RECORD (20 CITINGS)

UPOS.G Date last citing reference entered STN: 03 Aug 2011

OS.G CAPLUS 2008:907342; 2011:564516; 2010:1547096; 2010:1143442;  
 2004:480499; 2009:1204406; 2009:950080; 2009:662236;  
 2008:1517258; 2008:752419; 2008:22234; 2007:1051443; 2007:725314;  
 2006:954919; 2006:904359; 2006:501331; 2005:1228365; 2004:603148;  
 2004:144244; 2003:792127

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L31 ANSWER 31 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 138:391201 HCA Full-text  
ED Entered STN: 12 Jun 2003  
TI Supramolecular chiral films  
AU Ernst, Karl-Heinz; Fasel, Roman; Kuster, Y.  
CS Swiss Federal Labs. for Materials Testing and Research, Duebendorf,  
CH-8600, Switz.  
SO Proceedings of SPIE-The International Society for Optical Engineering ( 2002), 4806(Complex Mediums III: Beyond Linear Isotropic Dielectrics), 248-257  
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering  
 DT Journal  
 LA English  
 CC 66-3 (Surface Chemistry and Colloids)  
 AB The self-assembly of racemic and enantiopure heptahelicene, a helically shaped polyarom. hydrocarbon (C<sub>30</sub>H<sub>18</sub>), on single-crystal surfaces was studied at temps. between 150 K and 1000 K by means of surface sensitive methods like scanning tunneling microscopy (STM), temperature programmed desorption (TPD), LEED, time-of-flight secondary mass spectrometry (ToF-SIMS), XPS and diffraction (XPD), and Auger electron spectroscopy (AES). On Ni(111), Ni(100) and Cu(111), the mol. remains intact up to 450 K. Above that temperature it decomps. in several steps into carbon and hydrogen, the latter desorbing subsequently as H<sub>2</sub>. The adsorption of racemic heptahelicene on Cu(111) leads to a two-dimensional enantiomeric separation into at least 20 nm wide homochiral domains. In the first monolayer, the adsorbate-substrate complex has a geometry in which the mol. is oriented with three terminal rings parallel to the surface. After adsorption of enantiopure heptahelicene onto the stepped Cu(332) surface, an azimuthal alignment of the mol. spirals is observed, creating a single-phase orientational order. X-ray absorption studies (NEXAFS) using synchrotron radiation show for the mol. in the saturated monolayer on Ni(100) a tilted geometry.

ST heptahelicene self assembly copper nickel mol orientation enantiomer sepn  
 IT Phase separation  
     (enantiomeric; self-assembly of racemic and enantiopure heptahelicene)  
 IT Adsorption  
     Chirality  
     Molecular orientation  
     Orientational order  
     Self-assembled monolayers  
     Self-assembly  
         Thermal decomposition  
             (self-assembly of racemic and enantiopure  
                 heptahelicene)  
 IT Enantiomers  
     (separation; self-assembly of racemic and enantiopure heptahelicene)  
 IT Desorption  
     (thermal, of hydrogen; self-assembly of racemic and  
         enantiopure heptahelicene)  
 IT 16914-68-4, Heptahelicene 20508-10-5, (P)-Heptahelicene 40122-35-8,  
     (M)-Heptahelicene  
     (self-assembly of racemic and enantiopure heptahelicene)  
 IT 7440-44-0, Carbon, formation (nonpreparative)  
     (self-assembly of racemic and enantiopure heptahelicene)  
 IT 1333-74-0, Hydrogen, processes  
     (self-assembly of racemic and enantiopure heptahelicene)  
 IT 7440-02-0, Nickel, processes 7440-50-8, Copper, processes  
     (substrate; self-assembly of racemic and enantiopure  
         heptahelicene)

RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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L31 ANSWER 32 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 138:300081 HCA [Full-text](#)

ED Entered STN: 08 May 2003

TI Studies on the patterning of polyimide LB film and its application for bioelectronic device

AU Oh, Se Young; Park, Joon Kyu; Chung, Chan Moon; Choi, Jeong Woo

CS Dept. of Chem. Eng., Sogang Univ., Seoul, 121-742, S. Korea

SO Polymer (Korea) (2002), 26(5), 634-643

CODEN: POLLDG; ISSN: 0379-153X

PB Polymer Society of Korea

DT Journal

LA Korean

CC 9-16 (Biochemical Methods)

Section cross-reference(s): 38, 74

AB Ultrathin film of polyamic acid having benzene and sulfonyloxyimide moieties was prepared using the Langmuir-Blodgett (LB) technique, and then photosensitive polyimide LB film was obtained by the thermal treatment of precursor polyamic acid multilayers at 200°C for 1 h. The polyamic acid was synthesized by condensation polymerization under THF and pyridine cosolvent. All monomers and polymers were identified through elemental anal., FT-IR and 1H-NMR spectroscopic measurements. The microarray patterning of photosensitive polyimide LB film on a gold substrate was generated with a deep UV lithog. technique. The well-characterized monolayer of cytochrome c was immobilized on the microarray patterns using two different self-assembly processes. Phys. and electrochem. properties of the self-assembled cytochrome c monolayer were investigated based on cyclic voltammetry and atomic force microscopy (AFM). Also, its application in bioelectronic device was examined

ST polyimide LB film bioelectronic device

- IT Photolithography  
(UV; studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT Semiconductor devices  
(bioelec.; studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT Polysulfones, properties  
(polyamic acid-polyimide-; studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT Polyimides, properties  
(polyamic acid-polysulfone-; studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT Polyamic acids  
(polyimide-polysulfone-; studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT Langmuir-Blodgett films  
(studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT Polyimides, processes  
(studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT 9007-43-6, Cytochrome c, processes  
(immobilization in; studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT 405109-29-7P  
(studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT 89-32-7, 1,2,4,5-Benzenetetracarboxylic dianhydride 1655-45-4,  
2,6-Naphthalenedisulfonic acid disodium salt 7803-49-8, Hydroxyamine,  
reactions  
(studies on patterning of polyimide LB film and its application for bioelectronic device)
- IT 13827-62-8P, 2,6-Naphthalenedisulfonyl chloride 405109-28-6P  
(studies on patterning of polyimide LB film and its application for bioelectronic device)

L31 ANSWER 33 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 138:238428 HCA Full-text

ED Entered STN: 10 Apr 2003

TI Shattering of peptide ions on self-assembled  
monolayer surfaces

AU Laskin, Julia; Bailey, Thomas H.; Futrell, Jean H.

CS William R. Wiley Environmental Molecular Sciences Laboratory, Pacific  
Northwest National Laboratory, Richland, WA, 99352, USA

SO Journal of the American Chemical Society (2003), 125(6),  
1625-1632

CODEN: JACSAT; ISSN: 0002-7863

PB American Chemical Society

DT Journal

LA English

CC 34-3 (Amino Acids, Peptides, and Proteins)

Section cross-reference(s): 22, 66, 69

AB Time- and collision energy-resolved surface-induced dissociation (SID) of des-Arg1- and des-Arg9-bradykinin on a fluorinated self-assembled monolayer (SAM) surface was studied by use of a novel Fourier transform ion cyclotron resonance mass spectrometer (FT-ICR MS) specially equipped to perform SID expts. Time-resolved fragmentation efficiency curves (TFECs) were modeled by an RRKM-based approach developed in our laboratory that utilizes a very flexible anal. expression for the internal energy deposition function capable of reproducing both single- and multiple-collision activation in the gas phase

and excitation by collisions with a surface. Both exptl. observations and modeling establish a very sharp transition in the dynamics of ion-surface interaction: the shattering transition. The exptl. signature for this transition is the appearance of prompt (time-independent) fragmentation, which becomes dominant at high collision energies. Shattering opens a variety of dissociation pathways that are not accessible to slow collisional and thermal ion activation. This results in much better sequence coverage for the singly protonated peptides than dissociation patterns obtained with any of the slow activation methods. Modeling demonstrated that, for short reaction delays, dissociation of these peptides is solely determined by shattering. Internal energies required for shattering transition are approx. the same for des-Arg1 and des-Arg9-bradykinin, resulting in the overlap of fragmentation efficiency curves obtained at short reaction delays. At longer delay times, parent ions depletion is mainly determined by a slow decay rate and fragmentation efficiency curves for des-Arg1 and des-Arg9-bradykinin diverge. Dissociation thresholds of 1.17 and 1.09 eV and activation entropies of -22.2 and -23.3 cal/(mol K) were obtained for des-Arg1 and des-Arg9-bradykinin from RRKM modeling of time-resolved data. Dissociation parameters for des-Arg1-bradykinin are in good agreement with parameters derived from thermal expts. However, there is a significant discrepancy between the thermal data and dissociation parameters for des-Arg9-bradykinin obtained in this study. The difference is attributed to the differences in conformations that undergo thermal activation and activation by ion-surface collisions prior to dissociation

- ST shattering peptide ion self assembled  
monolayer surface FTICR MS; surface induced  
dissoch protonated bradykinin fragmentation kinetics simulation modeling;  
collisional energy transfer peptide ion surface excitation  
activation entropy
- IT Activation entropy  
(activation entropies for des-Arg1 and des-Arg9-bradykinin from RRKM  
modeling of time-resolved data)
- IT Energy level excitation  
(collisional; excitation by collisions of peptide ions with  
surface by modeling using internal energy deposition function)
- IT Internal energy  
(excitation by collisions of peptide ions with surface by  
modeling using internal energy deposition function)
- IT Ionic collisions  
Surface collisions  
(ion-surface; time- and collision energy-resolved  
surface-induced dissociation on self-assembled  
monolayer surface and fragmentation of protonated  
peptides by FTICR MS and modeling)
- IT Peptides, reactions  
(protonated; surface-induced dissociation on self-  
assembled monolayer surface and  
fragmentation of protonated des-Arg1- and des-Arg9-bradykinin by FTICR  
MS and modeling)
- IT Collisional energy transfer  
(shattering transition in dynamics of peptide ion-surface  
interaction at high collision energies)
- IT Dissociation kinetics  
(surface-induced dissociation kinetics and fragmentation of  
protonated des-Arg1- and des-Arg9-bradykinin by FTICR MS and modeling)
- IT Self-assembled monolayers  
(surface-induced dissociation on fluorinated self-  
assembled monolayer surface and  
fragmentation of protonated des-Arg1- and des-Arg9-bradykinin by FTICR  
MS and modeling)

IT Fragmentation reaction  
Ionic collisions  
Simulation and Modeling  
Surface  
(surface-induced dissociation on self-assembled monolayer surface and fragmentation of protonated des-Arg1- and des-Arg9-bradykinin by FTICR MS and modeling)

IT Fragmentation reaction kinetics  
(surface-induced dissociation on self-assembled monolayer surface and kinetics of fragmentation of protonated peptides by FTICR MS and modeling)

IT Collision-induced dissociation  
(time- and collision energy-resolved surface-induced dissociation on self-assembled monolayer surface and fragmentation of protonated peptides by FTICR MS and modeling)

IT Dissociation  
(time- and collision energy-resolved surface-induced dissociation; surface-induced dissociation on self-assembled monolayer surface and fragmentation of protonated des-Arg1- and des-Arg9-bradykinin by FTICR MS and modeling)

IT 330204-12-1 330575-15-0  
(surface-induced dissociation on self-assembled monolayer surface and fragmentation of protonated des-Arg1- and des-Arg9-bradykinin by FTICR MS and modeling)

OSC.G 49 THERE ARE 49 CAPLUS RECORDS THAT CITE THIS RECORD (50 CITINGS)

UPOS.G Date last citing reference entered STN: 16 Mar 2011

OS.G CAPLUS 2011:273478; 2011:11933; 2010:1451316; 2010:1361482;  
2008:1085612; 2010:791390; 2010:375893; 2004:562849;  
2009:1368329; 2009:1094540; 2009:861219; 2009:816873;  
2009:600699; 2009:603316; 2009:603314; 2009:166662; 2009:74177;  
2008:906678; 2008:238765; 2007:1105214; 2007:891791; 2007:891787;  
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L31 ANSWER 34 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 138:210766 HCA Full-text

ED Entered STN: 27 Mar 2003

TI Attachment of Alkyltrichlorosilanes to the Terminal 3,5-Dihydroxyphenyl  
Moieties of a Self-assembled Thiol Monolayer  
on Gold

AU Gothelf, Kurt V.; Larsen, Allan G.

CS Center for Catalysis, Department of Chemistry, University of Aarhus,  
Aarhus C, DK-8000, Den.

SO Journal of Colloid and Interface Science (2002), 255(2), 356-362

CODEN: JCISA5; ISSN: 0021-9797

PB Elsevier Science

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

AB The synthesis of 5-(6-mercaptohexyloxy)-1,3-dihydroxybenzene and the formation  
of a self-assembled monolayer on polycryst. Au using this compound are  
described. Methyltrichlorosilane and (tridecafluoro-1,1,2,2-  
tetrahydrooctyl)trichlorosilane were attached to the 3,5-dihydroxyphenyl  
terminus of the monolayer. The modified surfaces were studied by contact  
angle measurement, XPS, and cyclic voltammetry. High contact angles of 119°-  
128° were observed for the  
semifluoroalkylsilyl-functionalized monolayer. These high contact angles were  
maintained after subjecting the surface to, e.g., boiling in H<sub>2</sub>O or heating in  
air to 300°. Characterization of the silane-modified monolayers by XPS  
indicated more than one layer of silane present at the top of the monolayer.  
The thickness was reduced after boiling the cross-linked monolayers in H<sub>2</sub>O,  
however, maintaining high contact angles. Cyclic voltammetry studies revealed  
that the semifluoroalkylsilyl-functionalized surface showed a higher blocking  
capability and a higher electrochem. stability than the parent monolayer.

ST alkyltrichlorosilane attachment dihydroxyphenyl terminated thiol  
self assembled monolayer gold

IT Self-assembled monolayers

(attachment of alkyltrichlorosilanes to terminal dihydroxyphenyl moiety  
of self-assembled thiol monolayer on  
gold)

IT Cyclic voltammetry

(cyclic voltammograms; of self-assembled  
thiol monolayer on gold with alkyltrichlorosilanes attached  
to terminal dihydroxyphenyl moiety of thiol)

IT Surface area

(mol.; of self-assembled thiol monolayer  
on gold with alkyltrichlorosilanes attached to terminal dihydroxyphenyl

moiety of thiol derived from reductive desorption)

IT Contact angle  
X-ray photoelectron spectra  
(of self-assembled thiol monolayer on  
gold with alkyltrichlorosilanes attached to terminal dihydroxyphenyl  
moiety of thiol)

IT 75-79-6, Methyltrichlorosilane 78560-45-9,  
(Tridecafluoro-1,1,2,2-tetrahydrooctyl)trichlorosilane  
(attachment of alkyltrichlorosilanes to terminal dihydroxyphenyl moiety  
of self-assembled thiol monolayer on  
gold)

IT 500362-73-2P 500362-74-3P  
(intermediate; synthesis of mercaptohexyloxy dihydroxybenzene)

IT 7440-57-5D, Gold, complexes with dihydroxyphenyl deriva. of thiols  
500362-72-1D, gold-bound  
(on surface; attachment of alkyltrichlorosilanes to terminal  
dihydroxyphenyl moiety of self-assembled thiol  
monolayer on gold)

IT 140-89-6, Potassium O-ethyl dithiocarbonate 629-09-4, 1,6-Diiodohexane  
116345-96-1  
(synthesis of mercaptohexyloxy dihydroxybenzene)

IT 500362-72-1P  
(synthesis of mercaptohexyloxy dihydroxybenzene)

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

UPOS.G Date last citing reference entered STN: 17 Sep 2010

OS.G CAPLUS 2010:1118876; 2007:689238; 2005:419852

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L31 ANSWER 35 OF 60 HCA COPYRIGHT 2011 ACS on STN  
 AN 138:129998 HCA [Full-text](#)  
 ED Entered STN: 20 Feb 2003  
 TI Microfabricated recessed disk microelectrodes: characterization  
 in static and convective solutions  
 IN Fritsch, Ingrid; Henry, Charles Sherman; Bowen, Benjamin P.; Vandaveer,  
 Walter; Bratcher, Nicole  
 PA USA  
 SO U.S. Pat. Appl. Publ., 69 pp., Cont.-in-part of U.S. Ser. No. 946,259.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 CC 76-14 (Electric Phenomena)  
 Section cross-reference(s): 34, 66, 72, 80

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20030015422	A1	20030123	US 2002-104756	20020322 <--
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CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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	IPCI	G01N0027-327 [I,A]; C12N0011-00 [I,A]
	IPCR	G01N0027-30 [I,A]; G01N0027-327 [I,A]; C12N0011-00 [I,A]
	NCL	204/403.010; 438/001.000; 204/403.070; 435/174.000
	ECLA	B82Y030/00; G01N027/30; L82T201:01

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention relates to microfabricated recessed disk microelectrodes. More specifically, this invention relates to microcavities containing microelectrodes and being separated from surrounding media by a lipid bilayer that is anchored to the rim of the microcavity. The invention also relates to microcavities having a hole in the bottom in order to relieve osmotic pressure. The invention also relates to arrays of such microcavities. Construction and characterization of microfabricated recessed disk microelectrodes (RDMs) of 14 and 55  $\mu\text{m}$  diameter are reported. Hybrid blamers were constructed by fusion of vesicles of dimyristoylphosphatidyl choline (DMPC), which forms the top layer, with EtOH-rinsed SAMs of hexadecanethiol on Au, which form the bottom layer. Gramicidin A was included in the modifying solns. to incorporate it into hybrid blamers.

ST disk microelectrode characterization static convective soln

IT Membrane, biological  
 (bilayer; characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT Cyclic voltammetry  
 Electrochemical cells  
 Etching  
 Photolithography  
 Self-assembled monolayers

(characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT Lipids, analysis  
(characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT Microelectrodes  
(disk; characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT Oxidation  
(thermal; characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT 7440-47-3, Chromium, uses  
(adhesion layer; characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT 7757-79-1, Potassium nitrate, analysis 10377-60-3, Magnesium nitrate  
(characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT 18943-33-4  
(characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT 2917-26-2, Hexadecanethiol 18656-38-7, Dimyristoylphosphatidyl choline  
(characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT 7440-21-3, Silicon, uses 7631-86-9, Silica, uses  
(characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

IT 7440-57-5, Gold, uses 11029-61-1, Gramicidin A  
(characterization in static and convective solns. of microfabricated recessed disk microelectrodes)

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

UPOS.G Date last citing reference entered STN: 16 Feb 2009

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L31 ANSWER 36 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 138:128908 HCA Full-text

ED Entered STN: 20 Feb 2003

TI Hot microcontact printing for patterning ITO surfaces.  
Methodology, morphology, microstructure, and OLED charge injection barrier  
imaging

AU Koide, Yoshihiro; Such, Matthew W.; Basu, Rajiv; Evmenenko, Guennadi; Cui,  
Ji; Dutta, Pulak; Hersam, Mark C.; Marks, Tobin J.

CS Department of Chemistry Department of Materials Science and Engineering  
Department of Physics and Astronomy and the Materials Research Center,  
Northwestern University, Evanston, IL, 60208-3113, USA

SO Langmuir (2003), 19(1), 86-93  
CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other  
Reprographic Processes)

AB A soft lithog. microcontact printing ( $\mu$ CP) procedure is successfully applied  
for the first time to form densely packed organosilane self-assembled  
monolayers (SAMs) on the surface of ITO (Sn-doped In<sub>2</sub>O<sub>3</sub>) coated glass via a  
thermally activated deposition process. Hot microcontact printing ( $\mu$ HCP)  
enables localized transfer with 1.0-40  $\mu$ m feature sizes of dense  
docosyltrichlorosilane (CH<sub>3</sub>(CH<sub>2</sub>)<sub>20</sub>CH<sub>2</sub>SiCl<sub>3</sub> = DTS) monolayer patterns onto ITO,  
which reacts sluggishly under conventional  $\mu$ CP conditions. X-ray reflectivity  
measurements yield a thickness of  $12.1 \pm 0.1$  Å and a surface roughness of  $2.8$   
 $\pm 0.1$  Å for  $\mu$ HCP printed DTS films, which is well within the range for self-  
assembled monolayer formation, while the weak reflected intensity from  
conventionally prepared DTS films indicates a poorly organized monolayer  
structure. Noncontact mode AFM studies reveal that  $\mu$ HCP creates uniform SAMs  
over a wide area with excellent line edge resolution, while the original  
patterns are poorly transferred by conventional  $\mu$ CP, presumably due to the  
slow Si-O bond formation. Cyclic voltammetry of 1,1'-ferrocenedimethanol  
solns. using  $\mu$ HCP-derived, DTS SAM coated ITO working electrodes evidences  
good barrier properties, consistent with dense films. The DTS SAM patterns  
can be imaged by fabricating organic light-emitting diode (OLED)  
heterostructures on the patterned ITO. The DTS SAM role as a hole injection

- blocking layer enables patterned luminescence from the hot contact printed ITO surfaces.
- ST hot microcontact printing lithog ITO surface  
OLED; electroluminescent display ITO fabrication hot  
microcontact printing lithog
- IT Silicone rubber, uses  
(di-Me, Sylgard 184, stamp; microstructure and morphol. of self-  
assembled monolayers of organosilane patterns  
deposited by hot microcontact printing on ITO for organic  
light-emitting diode fabrication)
- IT Electroluminescent devices  
(displays, OLED; microstructure and morphol. of self-  
assembled monolayers of organosilane patterns  
deposited by hot microcontact printing on ITO for organic  
light-emitting diode fabrication)
- IT Electric insulators  
(docosyltrichlorosilane SAM coated on ITO surface  
by hot microcontact printing as mol. resist/insulator)
- IT Luminescent screens  
(electroluminescent, OLED; microstructure and morphol. of self-  
assembled monolayers of organosilane patterns  
deposited by hot microcontact printing on ITO for organic  
light-emitting diode fabrication)
- IT Lithography  
(microcontact; microstructure and morphol. of self-  
assembled monolayers of organosilane patterns  
deposited by hot microcontact printing on ITO for organic  
light-emitting diode fabrication)
- IT Luminescence, electroluminescence  
Microstructure  
Self-assembled monolayers  
(microstructure and morphol. of self-assembled  
monolayers of organosilane patterns deposited by hot  
microcontact printing on ITO for organic light-emitting diode fabrication)
- IT X-ray  
(reflectivity; microstructure and morphol. of self-  
assembled monolayers of organosilane patterns  
deposited by hot microcontact printing on ITO for organic  
light-emitting diode fabrication)
- IT 6938-66-5, 1-Bromodocosane  
(Grignard reaction with tetrachlorosilane)
- IT 50926-11-9, Indium tin oxide  
(anode; microstructure and morphol. of self-assembled  
monolayers of organosilane patterns deposited by hot  
microcontact printing on ITO for organic light-emitting diode fabrication)
- IT 7429-90-5, Aluminum, uses  
(cathode; microstructure and morphol. of self-  
assembled monolayers of organosilane patterns  
deposited by hot microcontact printing on ITO for organic  
light-emitting diode fabrication)
- IT 1291-48-1, 1,1'-Ferrocenedimethanol  
(cyclic voltammetry of ferrocenedimethanol solns. using  
hot microcontact printing derived docosyltrichlorosilane  
SAM on ITO electrode)
- IT 2085-33-8, Tris(8-hydroxyquinolate)aluminum  
(electron transport/emission layer; microstructure and morphol. of  
self-assembled monolayers of organosilane  
patterns deposited by hot microcontact printing on ITO for  
organic light-emitting diode fabrication)
- IT 65181-78-4, N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-[1,1'-biphenyl]-4,4'-

diamine

(hole transport layer; microstructure and morphol. of self-assembled monolayers of organosilane patterns deposited by hot microcontact printing on ITO for organic light-emitting diode fabrication)

IT 7325-84-0P, Docosyltrichlorosilane  
(microstructure and morphol. of self-assembled monolayers of organosilane patterns deposited by hot microcontact printing on ITO for organic light-emitting diode fabrication)

OSC.G 40 THERE ARE 40 CAPLUS RECORDS THAT CITE THIS RECORD (40 CITINGS)

UPOS.G Date last citing reference entered STN: 27 Jul 2011

OS.G CAPLUS 2011:867147; 2011:34792; 2010:964331; 2010:455128; 2009:1278094;  
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L31 ANSWER 37 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 138:72971 HCA [Full-text](#)

ED Entered STN: 30 Jan 2003

TI Azinium-( $\pi$ -Bridge)-Pyrrole NLO-Phores: Influence of Heterocycle Acceptors on Chromophoric and Self-Assembled Thin-Film Properties

AU Facchetti, Antonio; Abbotto, Alessandro; Beverina, Luca; van der Boom, Milko E.; Dutta, Pulak; Evmenenko, Guennadi; Marks, Tobin J.; Pagani, Giorgio A.

CS Department of Material Science, University of Milano-Bicocca, Milan, 20125, Italy

SO Chemistry of Materials (2002), 14(12), 4996-5005

CODEN: CMATEX; ISSN: 0897-4756

PB American Chemical Society

DT Journal

LA English

CC 22-13 (Physical Organic Chemistry)

Section cross-reference(s): 66, 72, 73

OS CASREACT 138:72971

AB Novel heterocycle-based azine/azinium-( $\pi$ -bridge)-pyrrole systems, [(1-pyrid-4-yl)-2-(N-methylpyrrol-2-yl)]ethene (1), 5-[(N-methylpyrrol-2-yl)azo]quinoline (2), 5-[(N-methylpyrrol-2-yl)azo]isoquinoline (3), and the corresponding N-methotriates were synthesized and characterized. Chromophore precursors react with iodobenzyl-functionalized surfaces affording polar-ordered  $\sigma$ -bonded thin films, resp. All systems were studied by optical (UV-visible, photoluminescence) spectroscopies, electrochem. (CV), and thermal (TGA, DSC) techniques. Self-assembled chromophore monolayers on glass, quartz, and silicon substrates have been characterized by a full complement of physicochem. techniques: optical spectroscopy, aqueous advancing contact angle measurements, specular x-ray reflectivity, atomic force microscopy, and angle-dependent polarized second harmonic generation. Film second harmonic generation responses  $\chi(2)_{zzz}$  vary more than 1 order of magnitude ranging from 1.3 and 1.6, to 34 + 10-8 esu for 9-, 8-, and 7-based monolayers, resp. This study demonstrates the following: (i) SA monolayers can be prepared using various types of azine-containing precursors; (ii) chromophore and SA film properties are influenced predominantly by the nature of the  $\pi$ -deficient azinium acceptor; (iii) unsubstituted,  $\pi$ -excessive pyrrol-2-yl rings can act as primary donor groups in push-pull conjugated systems.

ST heterocycle acceptor chromophore self assembled film NLO property spectra

IT Quantum transition

(HOMO-LUMO; influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT Chromophores

(azinium- $\pi$ -bridge-pyrrole push-pull chromophores; influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT Atomic force microscopy

Contact angle

Cyclic voltammetry

Differential scanning calorimetry

Fluorescence

Luminescence

Nonlinear optical properties

Optical absorption

Optical hyperpolarizability

Oxidation potential

Redox reaction

Reduction potential

Second-harmonic generation

Self-assembled monolayers

Solvatochromism

Thermogravimetric analysis

UV and visible spectra

X-ray diffraction

(influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT Films

(self-assembled; influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT 194220-89-8P

(attempted preparation; influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT 197080-20-9

(influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT 477586-17-7DP, modified silicon-grafted 479675-71-3DP, modified silicon-grafted 479675-72-4DP, modified silicon-grafted

(influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT 439281-02-4P 439281-03-5P 439281-05-7P 439281-07-9P

(influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT 45999-96-0P, 5-Isoquinolinediazonium 433736-34-6P, 5-Quinolinediazonium

(intermediate; influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT 333-27-7, Methyl triflate

(reagent; influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT 370070-17-0D, modified silicon-grafted

(silicon modification agent; influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

IT 96-54-8, N-Methylpyrrole 611-34-7, 5-Aminoquinoline 1125-60-6, 5-Aminoisoquinoline

(starting material; influence of heterocycle acceptors on chromophoric and self-assembled thin-film properties)

OSC.G 48 THERE ARE 48 CAPLUS RECORDS THAT CITE THIS RECORD (50 CITINGS)

UPOS.G Date last citing reference entered STN: 24 Aug 2011

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L31 ANSWER 38 OF 60 HCA COPYRIGHT 2011 ACS on STN  
 AN 138:56381 HCA Full-text  
 ED Entered STN: 23 Jan 2003  
 TI Patterned Conductive Polyaniline on Si(100) Surface via  
 Self-Assembly and Graft Polymerization  
 AU Li, Z. F.; Ruckenstein, E.  
 CS Department of Chemical Engineering, State University of New York at  
 Buffalo, Buffalo, NY, 14260, USA  
 SO Macromolecules (2002), 35(25), 9506-9512  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PB American Chemical Society  
 DT Journal  
 LA English  
 CC 35-8 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 74, 76  
 AB A combination of surface graft polymerization of aniline and photopatterned  
 self-assembly monolayer (SAM) was used to generate a well-defined pattern of  
 conductive polyaniline on a Si(100) surface. A self-assembly of phenylsilane  
 monolayer was first generated by reacting a hydroxylated silicon surface with  
 phenyltrichlorosilane under a dry inert (N2) atmospheric. The formed SAM layer  
 has been photopatterned under an UV laser at 263 nm through a lithog. mask.  
 The patterned SAM was reacted with triflic acid (HOTf) under a dry inert  
 atmospheric to remove the benzene rings from the SAM layer. The OTf groups of  
 the triflated SAM have been substituted with aniline under a dry inert  
 atmospheric to generate an aniline-primed substrate which was further used for  
 the graft polymerization of aniline to prepare a patterned conductive  
 polyaniline (PANI) layer. The composition, microstructure, and morphol. of  
 PANI grafted silicon surfaces were examined by XPS, atomic force microscopy  
 (AFM), SEM, four probe conductivity, and contact angle measurements. The  
 surface conductivity of grafted PANI free of patterning was 23 S/cm and  
 through the patterned wires was 21 S/cm (for the surface fraction grafted),  
 which are larger than the usual value of the homopolymer PANI films (.apprx.1  
 S/cm). Microscopy images revealed a compact grafted PANI and a high edge  
 acuity of the pattern. The present method provides a new strategy for the  
 generation of a pattern of conductive polymers via graft polymerization  
 ST conductive polymer polyaniline graft silicon surface pattern  
 IT Polyanilines  
 (graft on silicon surface; preparation of patterned conductive  
 polyaniline on Si(100) surface via self-assembly and graft  
 polymerization)  
 IT Polymerization  
 (graft; patterned conductive polyaniline on Si(100) surface  
 via self-assembly and graft polymerization)  
 IT Photomasks (lithographic masks)  
 (in preparation of patterned conductive polyaniline on Si(100)  
 surface via self-assembly and graft polymerization)  
 IT Contact angle  
 Polymer morphology  
 Surface composition  
 (of patterned conductive polyaniline on Si(100) surface via  
 self-assembly and graft polymerization)  
 IT Conducting polymers  
 Self-assembly  
 (patterned conductive polyaniline on Si(100) surface via  
 self-assembly and graft polymerization)  
 IT 98-13-5, Phenyltrichlorosilane 1493-13-6, Triflic acid  
 (in preparation of patterned conductive polyaniline on Si(100))

surface via self-assembly and graft polymerization)

IT 7440-21-3DP, Silicon, reaction product of surface graft polymerization of polyaniline 25233-30-1DP, Polyaniline, graft on silicon surface

(preparation of patterned conductive polyaniline on Si(100) surface via self-assembly and graft polymerization)

OSC.G 32 THERE ARE 32 CAPLUS RECORDS THAT CITE THIS RECORD (32 CITINGS)

UPOS.G Date last citing reference entered STN: 09 Mar 2011

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L31 ANSWER 39 OF 60 HCA COPYRIGHT 2011 ACS on STM  
 AN 137:390816 HCA Full-text  
 ED Entered STM: 19 Dec 2002

TI Anode Interfacial Engineering Approaches to Enhancing Anode/Hole Transport Layer Interfacial Stability and Charge Injection Efficiency in Organic Light-Emitting Diodes

AU Cui, Ji; Huang, Qinglan; Veinot, Jonathan C. G.; Yan, He; Wang, Qingwu; Hutchison, Geoffrey R.; Richter, Andrew G.; Evmenenko, Guennadi; Dutta, Pulak; Marks, Tobin J.

CS Department of Chemistry and Materials Research Center and Department of Physics and Astronomy and the Materials Science Center, Northwestern University, Evanston, IL, 60208-3113, USA

SO Langmuir (2002), 18(25), 9958-9970  
 CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society  
 DT Journal  
 LA English  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 22, 66, 76

AB The integrity of anode/organic interfacial contact is shown to be crucial to the performance and stability of archetypical small mol. organic light-emitting diodes (OLEDs). In this contribution, vapor-deposited lipophilic, hole-transporting 1,4-bis(phenyl-m-tolylamino)biphenyl (TPD) and 1,4-bis(1-naphthylphenylamino)biphenyl (NPB) thin films are shown to undergo decohesion on ITO anode surfaces under mild heating. An effective approach to ameliorate such interfacial decohesion is introduction, via self-assembly or spin-coating, of covalently bound N(p-C6H4CH2CH2CH2SiCl3)3 (TAA)- and 4,4'-bis[(p-trichlorosilylpropylphenyl)phenylamino]biphenyl (TPD-Si2)-derived adhesion/injection layers at the anode/hole transport layer interface. The resulting angstrom-scale hole transport layers prevent decohesion of vapor-deposited hole transport layers and significantly enhance OLED hole injection fluence. OLEDs fabricated with these modified interfaces exhibit appreciably reduced turn-on voltages, considerably higher luminous intensities, and enhanced thermal robustness vs. bare ITO-based control devices. Spin-coated, cross-linked TPD-Si2 films, in particular, prove to be superior to conventional ITO functionalization interlayers, including copper phthalocyanine, in this regard. The present ITO-functionalized devices achieve maximum external forward quantum efficiencies as high as 1.2% and a luminous level of 15 000 cd/m2 in simple ITO/interlayer/HTL/Alq/Al heterostructures. We also show that Cu(Pc) interlayers actually suppress, rather than enhance, hole injection and template crystallization of vapor-deposited TPD and NPB at modest temps., resulting in poor OLED thermal stability.

ST anode interface modification hole transport injection thermal stability OLED; crosslinked triarylamine ITO hole transporting layer interfacial stability LED; electroluminescent device anode interface modification triarylamine

IT Self-assembled monolayers  
 (TAA, effect of monolayer number on device performance; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)

IT Hole transport  
 (and injection; anode interfacial engineering approaches to enhancing

- anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT Anodes  
Electric current-potential relationship  
Electroluminescent devices  
Solid-solid interface  
(anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT Adhesion, physical  
(improvement of; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT Thermal stability  
(of OLED; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT X-ray reflectivity spectra  
(of TAA and TPD-Si2 films; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT Cyclic voltammetry  
Thermogravimetric analysis  
(of TPD-Si2 film; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT UV and visible spectra  
(of TPD-Si2 self-assembly; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT Crystallization  
(of hole-transporting layers as function of temperature; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT Surface structure  
(of hole-transporting layers; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT 2085-33-8, Alq3  
(anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT 106-37-6, 1,4-Dibromobenzene 106-95-6, Allyl bromide, reactions 531-91-9, N,N'-Diphenylbenzidine 10025-78-2, Trichlorosilane (HSiCl3)  
(anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes using TPD-Si2 synthesized using)
- IT 249920-78-3P 344782-48-5P  
(anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes using TPD-Si2 synthesized using)
- IT 446874-82-4P  
(anode modification adhesion/injection interlayer; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)
- IT 239083-35-3  
(anode modification adhesion/injection interlayer; anode interfacial engineering approaches to enhancing anode/hole transport layer

interfacial stability and charge injection efficiency in organic light-emitting diodes)

IT 50926-11-9, Indium tin oxide  
(anode; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)

IT 7429-90-5, Aluminum, uses 7440-57-5, Gold, uses  
(cathode; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)

IT 7789-24-4, Lithium fluoride, uses  
(electron injecting layer; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)

IT 147-14-8, Copper phthalocyanine 65181-78-4, TPD 123847-85-8  
(hole-transporting layer; anode interfacial engineering approaches to enhancing anode/hole transport layer interfacial stability and charge injection efficiency in organic light-emitting diodes)

OSC.G 59 THERE ARE 59 CAPLUS RECORDS THAT CITE THIS RECORD (61 CITINGS)

UPOS.G Date last citing reference entered STN: 10 Jan 2011

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L31 ANSWER 40 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 137:389597 HCA [Full-text](#)

ED Entered STN: 19 Dec 2002

TI Effects of Metal Coating on Self-Assembled

Monolayers on Gold. 1. Copper on Dodecanethiol and Octadecanethiol

AU Colavita, Paula E.; Doescher, Michael S.; Molliet, Annabelle; Evans, Una;

Reddic, John; Zhou, Jing; Chen, Donna; Miney, Paul G.; Myrick, M. L.  
CS Department of Chemistry and Biochemistry, University of South Carolina,  
Columbia, SC, 29208, USA  
SO Langmuir (2002), 18(22), 8503-8509  
CODEN: LANGD5; ISSN: 0743-7463  
PB American Chemical Society  
DT Journal  
LA English  
CC 66-4 (Surface Chemistry and Colloids)  
AB The authors report studies on the perturbations induced by the evaporation of Cu metal overlayers on dodecanethiol and octadecanethiol self-assembled monolayers (SAMs). Monolayers were characterized after deposition on a Au substrate from an ethanolic solution, after heat treatment alone, after acid treatment alone, after phys. evaporation of a submonolayer Cu layer alone, and after deposition of an optically thick Cu layer followed by stripping with a HNO3 solution. The monolayers were studied using cyclic voltammetry, grazing-angle IR spectroscopy and XPS. Cyclic voltammetry revealed that the Au electrodes are passivated by the formation of the monolayers. The degree of passivation does not decrease with exposure to <6 N HNO3 solns. or after Cu deposition and removal with HNO3. The IR studies indicate that the deposition of metal induced a reorganization, interpreted as increased disordering, of the monolayer, that is similar to heat treatment alone. XPS expts. showed no evidence of bond formation between C and Cu upon deposition of the Cu layer on the SAM.  
ST metal coating thiol self assembled monolayer  
gold; copper coating thiol self assembled  
monolayer gold  
IT Self-assembled monolayers  
(effects of copper coating on self-assembled  
monolayers of thiols on gold studied using cyclic  
voltammetry, grazing-angle IR and XPS)  
IT 7440-50-8, Copper, processes  
(effects of copper coating on self-assembled  
monolayers of thiols on gold studied using cyclic  
voltammetry, grazing-angle IR and XPS)  
IT 112-55-0D, 1-Dodecanethiol, gold-bound 2885-00-9D, 1-Octadecanethiol,  
gold-bound 7440-57-5D, Gold, thiolated  
(effects of copper coating on self-assembled  
monolayers of thiols on gold studied using cyclic  
voltammetry, grazing-angle IR and XPS)  
OSC.G 17 THERE ARE 17 CAPLUS RECORDS THAT CITE THIS RECORD (17 CITINGS)  
UPOS.G Date last citing reference entered STN: 06 Jun 2011  
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L31 ANSWER 41 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 137:115020 HCA [Full-text](#)

ED Entered STN: 15 Aug 2002

TI Chemically Mediated Grain Growth in Nanotextured Au, Au/Cu Thin Films:  
Novel Substrates for the Formation of Self-  
Assembled Monolayers

AU Twardowski, Mariusz; Nuzzo, Ralph G.

CS Department of Chemistry and the Frederick Seitz Materials Research  
Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, 61801,  
USA

SO Langmuir (2002), 18(14), 5529-5538

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

Section cross-reference(s): 75

AB The authors describe a solution-based procedure that affects the bulk recrystn. of Au and Au/Cu alloy thin films. Nanocryst. Au or Au/Cu films of 1800-2000 Å in thickness were deposited on glass substrates by DC-plasma-source sputtering. A 5 Å thick Ti layer was used to promote the adhesion of these films to the substrate. The films were sequentially treated with piranha solution (3:1 concentrated H2SO4/30% H2O2), followed by immersion in 3:1:16 HCl/HNO3/H2O. Atomic force microscopy (AFM) revealed that this treatment results in a coalescence of the fine-scale metal grains into larger, often irregular shaped domains. Com. acquired films grown by thermal evaporation behaved in a similar manner but displayed more extensive grain growth. XRD rocking angle measurements made of the Au(222) peak show a reduction in the fwhm of .apprx.50-80% in the treated Au films, indicating that the oxidative treatment induces a significant bulk recrystn. of the metal. The dynamics suggest that the recrystn. is related to the preferential dissoln. of Au and/or impurities present at grain boundaries. This dissoln. leads to their unpinning and subsequent merger into larger grains. This hypothesis was tested by cosputtering Cu with the Au to form a dilute Cu/Au thin film. AFM data confirmed that the inclusion of this diluent significantly enhances grain growth and decreases surface root-mean-square roughness. The bulk recrystn. effect diminishes, however, with either an increase in the adhesion layer thickness or Cu content above a finite limit. To test their surface qualities, treated Au films were used as substrates for the growth of self-assembled monolayers (SAMs) of hexadecanethiol. The resulting SAMs had exceptional barrier properties, being extremely impermeable to aqueous redox moieties as measured by cyclic voltammetry.

ST grain growth nanotextured gold copper film piranha treatment; nanotextured gold copper film self assembled monolayer substrate

IT Grain growth

Recrystallization  
Self-assembled monolayers

(chemical mediated grain growth in nanotextured Au, Au/Cu thin films to

use as substrates for formation of self-assembled monolayers)

IT Surface roughness  
(of chemical mediated Au and Au/Cu thin films)

IT 7440-57-5, Gold, properties  
(chemical mediated grain growth in nanotextured Au and Au/Cu thin films to use as substrates for formation of self-assembled monolayers)

IT 11143-03-6 64800-38-0 108801-65-6, Copper 6, gold 94 (atomic)  
443729-40-6  
(chemical mediated grain growth in nanotextured Au, Au/Cu thin films to use as substrates for formation of self-assembled monolayers)

IT 2917-26-2, 1-Hexadecanethiol  
(chemical mediated grain growth in nanotextured Au, Au/Cu thin films to use as substrates for formation of self-assembled monolayers of)

IT 8007-56-5, Aqua regia  
(cleaning solution; effect of aqua regia treatment of supported Au thin films on their electrochem. barrier properties)

IT 128705-31-7, Piranha  
(cleaning solution; effect of piranha solution treatment of supported Au thin films on their grain size)

IT 7440-32-6, Titanium, uses 7440-47-3, Chromium, uses  
(used to promote adhesion of Au and Au/Cu thin films on glass substrates)

OSC.G 35 THERE ARE 35 CAPLUS RECORDS THAT CITE THIS RECORD (35 CITINGS)

UPOS.G Date last citing reference entered STN: 11 Mar 2011

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2009:880425; 2009:874458; 2009:515078; 2008:960535; 2008:890733;  
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AN 136:391441 HCA Full-text

ED Entered STN: 13 Jun 2002

TI Ordered monolayers of nanographitic sheets processed from solutions via oxidative cyclodehydrogenation

AU Samori, Paolo; Simpson, Christopher D.; Muellen, Klaus; Rabe, Juergen P.  
 CS Department of Physics, Humboldt University Berlin, Berlin, 10115, Germany  
 SO Langmuir (2002), 18(11), 4183-4185

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

Section cross-reference(s): 25

AB We describe a new approach for solution processing of crystalline monolayers of an alkyl-substituted polycyclic aromatic hydrocarbon mol. on the basal plane of graphite. These layers are prepared by first adsorbing a soluble oligophenyl precursor at a solid-liquid interface and subsequently performing the oxidative cyclodehydrogenation reaction to the final fused product in-situ. Scanning tunneling microscopy imaging with submol. resolution allowed visualization of the ordered nanostructures of both the precursors and the final organic adlayer, proving that the reaction had occurred.

ST polycyclic arom hydrocarbon prepn graphite surface  
 oxidative cyclodehydrogenation

IT Interfacial structure  
 (alkyl-substituted polycyclic aromatic hydrocarbons on graphite prepared from solns. via oxidative cyclodehydrogenation in relation to)

IT Self-assembled monolayers  
 (of alkyl-substituted polycyclic aromatic hydrocarbons on graphite prepared from solns. via oxidative cyclodehydrogenation)

IT Aromatization  
 (oxidative; alkyl-substituted polycyclic aromatic hydrocarbons)

on graphite prepared from solns. via oxidative cyclodehydrogenation)

IT 7782-42-5, Graphite, properties  
(alkyl-substituted polycyclic aromatic hydrocarbons on graphite prepared from solns. via oxidative cyclodehydrogenation)

IT 170698-88-1P  
(alkyl-substituted polycyclic aromatic hydrocarbons on graphite prepared from solns. via oxidative cyclodehydrogenation)

IT 170698-89-2, Hexakis(4-dodecylphenyl)benzene  
(alkyl-substituted polycyclic aromatic hydrocarbons on graphite prepared from solns. via oxidative cyclodehydrogenation of)

OSC.G 11 THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)

UPOS.G Date last citing reference entered STN: 10 Aug 2011

OS.G CAPLUS 2011:644824; 2010:1061939; 2009:1516396; 2009:1158122;  
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L31 ANSWER 43 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 136:59250 HCA Full-text

ED Entered STN: 17 Jan 2002

TI Hydrophobic Organization of Monolayer-Protected Au Clusters on Thiol-Functionalized Au(111) Surfaces

AU Aslam, M.; Mulla, I. S.; Vijayamohan, K.

CS Physical and Materials Chemistry Division, National Chemical Laboratory, Pune, 411008, India

SO Langmuir (2001), 17(24), 7487-7493

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

- AB The present study explains a novel hydrophobic organization of  $4.8 \pm 0.5$  nm core diameter Au clusters in contrast to the organization using covalent and electrostatic interactions where specific bifunctional mols. are used. This unique method of organization is demonstrated using quartz crystal microbalance (QCM), UV-visible spectroscopy, cyclic voltammetry, XPS, x-ray diffraction, and I-V measurements. QCM results show a slow attainment of saturation coverage ( $1010$  clusters/cm<sup>2</sup>) of Au nanoclusters on the self-assembled monolayer (SAM) functionalized substrate, and the equilibrium constant (K<sub>eq</sub>) is 3 times less compared to that for the monolayer formation using dodecanethiol. The electronic and optical properties (e.g., surface plasmon band .apprx.525 nm) of these films show that the Au colloids maintain their individual character without fusion to larger units, and the current-voltage behavior shows nonlinearity. X-ray photoelectron spectra of the functionalized Au surface treated with monolayer-protected Au clusters (MPCs) reveal that S 2p shows a 0.2 eV shift compared to that of a dodecanethiol SAM. Cyclic voltammetric studies confirm the redox accessibility of these MPCs with an E° value of 0.65 V ( $\Delta E \approx 60$  mV, I<sub>pa</sub>/I<sub>pc</sub>  $\approx 1$ ) and a surface coverage of  $2.15 \times 10^{-9}$  mol/cm<sup>2</sup> on the SAM-functionalized surface. The hydrophobic organization of MPCs on the functionalized Au substrate forms an ideal platform for examining the existing theor. models associated with the adsorption of colloids and proteins, as well as cellular attachment and adhesion at solid surfaces.
- ST hydrophobic organization gold monolayer protected cluster thiol SAM
- IT Self-assembled monolayers  
(hydrophobic organization of monolayer-protected Au clusters on thiol SAM-functionalized Au(111) surfaces)
- IT Clusters  
(nanoclusters; hydrophobic organization of monolayer-protected Au clusters on thiol SAM-functionalized Au(111) surfaces)
- IT Electric current-potential relationship  
(of SAM-functionalized Au(111) surfaces before and after adsorption of Au clusters)
- IT Adsorption  
X-ray photoelectron spectra  
(of dodecanethiol SAM on Au surface and monolayer-protected Au clusters on SAM-functionalized Au surface)
- IT Particle size distribution  
UV and visible spectra  
(of monolayer-protected Au clusters)
- IT IR spectra  
(of monolayer-protected Au clusters on SAM-functionalized Au surface)
- IT Cyclic voltammetry  
(using SAM-functionalized Au(111) surfaces as working electrode before and after adsorption of Au clusters)
- IT 7440-57-5, Gold, properties  
(clusters; hydrophobic organization of monolayer-protected Au clusters on thiol SAM-functionalized Au(111) surfaces)
- IT 112-55-0, 1-Dodecanethiol  
(hydrophobic organization of monolayer-protected Au clusters on thiol SAM-functionalized Au(111) surfaces)
- OSC.G 25 THERE ARE 25 CAPLUS RECORDS THAT CITE THIS RECORD (25 CITINGS)
- UFOS.G Date last citing reference entered STN: 23 Dec 2010
- OS.G CAPLUS 2010:1541046; 2010:800769; 2010:78891; 2009:1260639;  
2008:1461198; 2008:1071738; 2008:869707; 2008:26902;  
2007:1132970; 2007:526407; 2007:258552; 2007:125252; 2006:804636;  
2005:626810; 2005:307112; 2004:815117; 2004:395821; 2004:395797;

2004:198083; 2003:942591; 2003:894875; 2003:779477; 2003:170716;  
2003:89990; 2002:818449

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L31 ANSWER 44 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 135:377217 HCA [Full-text](#)

ED Entered STN: 13 Dec 2001

TI Self-Assembled Monolayers of  
Aromatic Thiol and Selenol on Silver: Comparative Study of  
Adsorptivity and Stability

AU Han, Sang Woo; Lee, Seung Joon; Kim, Kwan

CS Laboratory of Intelligent Interface School of Chemistry and Molecular  
Engineering and Center for Molecular Catalysis, Seoul National University,  
Seoul, 151-742, S. Korea

SO Langmuir (2001), 17(22), 6981-6987

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

AB The authors have studied comparative adsorptivities and relative stabilities of self-assembled monolayers of thiol (benzenethiol, BT) vs. selenol (benzeneselenol, BSe) on a Ag surface by diffuse reflectance IR Fourier transform (DRIFT) spectroscopy and surface-enhanced Raman spectroscopy (SERS). BT and BSe are chemisorbed on Ag as benzenethiolate and benzeneselenolate, resp., after deprotonation with a tilted orientation with respect to the substrate surface; the benzene rings of BT and BSe are tilted by 25° and 37°, resp., from the substrate normal. Competitive adsorption expts. show that adsorption of BT is more favorable by 0.3 kcal/mol. Temperature-dependent DRIFT spectra indicated that the monolayer of benzenethiolate on Ag is thermally more stable than that of benzeneselenolate. This could be evidenced from the fact that the vibrational peaks of the benzenethiolate species were observed up to 458 K, while those of benzeneselenolate became substantially weakened around 418 K. The more neg. desorption potential of the BT monolayer clearly indicates that the benzenethiolate binds more strongly to the Ag surface than the benzeneselenolate does.

ST self assembled monolayer benzenethiol  
benzeneselenol adsorption silver; SAM benzenethiol  
benzeneselenol adsorption silver

IT Self-assembled monolayers  
(adsorptivity and stability of self-assembled  
monolayers of aromatic thiol and selenol on silver)

IT Adsorption  
(competitive; adsorptivity and stability of self-  
assembled monolayers of aromatic thiol and  
selenol on silver)

IT IR reflectance spectra  
(diffuse; of benzenethiol and benzeneselenol adsorbed on Ag)

IT SERS (Raman scattering)  
(of benzenethiol and benzeneselenol adsorbed on Ag)

IT 108-98-5, Benzenethiol, processes 645-96-5, Benzeneselenol  
(adsorptivity and stability of self-assembled  
monolayers of aromatic thiol and selenol on silver)

IT 7440-22-4D, Silver, complexes, properties 13133-62-5D, Benzenethiolate,  
silver-bound, properties 14971-39-2D, Benzeneselenolate, silver-bound  
(on surface; adsorptivity and stability of self-  
assembled monolayers of aromatic thiol and  
selenol on silver)

OSC.G 64 THERE ARE 64 CAPLUS RECORDS THAT CITE THIS RECORD (64 CITINGS)

UPOS.G Date last citing reference entered STN: 31 May 2011

OS.G CAPLUS 2011:634967; 2011:524459; 2010:1556742; 2010:1497376;  
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L31 ANSWER 45 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 135:249815 HCA Full-text  
ED Entered STN: 11 Oct 2001  
TI Computational nanotribology: SAMs for MEMS  
AU Berry, Rajiv J.; Wintrich, Nicole L.; Bharadwaj, Rishikesh K.; Schwartz, Martin  
CS Air Force Research Laboratory, Materials Directorate, Wright-Patterson AFB, OH, 45433, USA  
SO Materials Research Society Symposium Proceedings (2001), 649(Fundamentals of Nanoindentation and Nanotribology II), Q9.5.1-Q9.5.6 CODEN: MRSPDH; ISSN: 0272-9172  
PB Materials Research Society  
DT Journal; General Review  
LA English  
CC 76-0 (Electric Phenomena)  
Section cross-reference(s): 65, 66  
AB A review with 10 refs. Self-assembled monolayers (SAMs) consisting of hydrocarbon chains attached to silica walls were evaluated computationally for their high temperature stability, life cycle and performance in microelectromech. systems (MEMS). Ab initio calcns. at sufficiently high level of theory were conducted on model compds. to predict the bond strengths holding the monolayer tethered to the MEMS device and relate them to its thermal stability. Non-equilibrium mol. dynamics (NEMD) simulations under sliding periodic boundary conditions were employed to compute the frictional force as a function of applied load. The NEMD trajectories were analyzed for the structure and chain dynamics of the SAMs and compared with NEMD and equilibrium MD results for the fluid. The significance of monolayer penetration depth, monolayer gauche fraction, wall thermostat characteristics and the size of the simulation box on the computed results were studied.  
ST review hydrocarbon chain monolayers silica gel surface MEMS  
IT Micromachines  
Semiconductor devices  
(MEMS system; computational nanotribol. in evaluation of MEMS system with hydrocarbon chains on silica gel surface)  
IT Friction  
Molecular dynamics  
Self-assembled monolayers  
(computational nanotribol. in evaluation of MEMS system with hydrocarbon chains on silica gel surface)  
IT Hydrocarbons, uses  
(computational nanotribol. in evaluation of MEMS system with hydrocarbon chains on silica gel surface)  
IT Tribology  
(nano-; computational nanotribol. in evaluation of MEMS system with hydrocarbon chains on silica gel surface)  
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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L31 ANSWER 46 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 135:232127 HCA Full-text

ED Entered STN: 04 Oct 2001

TI Ordered nanostructures of a [2] catenane through self-assembly at surfaces. An STM study with sub-molecular resolution

AU Samori, Paolo; Jackel, Frank; Unsai, Omer; Godt, Adelheid; Rabe, Jurgen P.

CS Department of Physics, Humboldt Univ. Berlin, Berlin, 10115, Germany

SO ChemPhysChem (2001), 2(7), 461-464 Published in: Angew.

Chem., Int. Ed., 40(14)

CODEN: CPCCHFT; ISSN: 1439-4235

PB Wiley-VCH Verlag GmbH

DT Journal

LA English

CC 66-4 (Surface Chemistry and Colloids)

Section cross-reference(s): 22

AB STM is an important technique which allows not only investigations of structure and dynamics of organic adsorbates but also their manipulation at the mol. level. Herein the study dealt with STM investigations of the [2]catenane which consist of two 87-membered rings and related compds. The large rings of the [2]catenane have conformational flexibility due to the long aliphatic chains. This features give rise to adopt a shape to form tightly-packed 2-dimensional crystals on highly oriented pyrolytic graphite (HOPG) through self-assembly from solution. The STM images revealed that the adsorbed catenane adopted a quaternary structure, in which the 2 angled moieties are at the rim and the 2 rodlike units are in the middle of the interlocked system. This interpretation of the images was supported by mol. mechanics calcns. of [2]catenane on HOPG. Both macrocycles forming the catenane are unfolded and ring-shaped. They assemble nearly flat on HOPG, which allows for a maximum overlap of the electronic states of the adsorbate with the ones of the substrate. The computed structure was in good agreement with the STM results.

ST catenane ordering graphite surface self assembly

IT Nanostructures

Order-disorder transition

Self-assembled monolayers

(ordered nanostructures of [2] catenanes through self-assembly at HOPG surfaces)

IT 7782-42-5D, Graphite, highly oriented pyrolytic, uses

(ordered nanostructures of [2] catenanes through self-assembly at HOPG surfaces)

IT 358768-04-4 358768-05-5 358768-07-7

(ordered nanostructures of [2] catenanes through self-assembly at HOPG surfaces)

OSC.G 20 THERE ARE 20 CAPLUS RECORDS THAT CITE THIS RECORD (20 CITINGS)

UPOS.G Date last citing reference entered STN: 20 Jul 2011

OS.G CAPLUS 2011:857619; 2009:749681; 2009:380805; 2008:1250405;

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2007:490022; 2007:361943; 2007:23497; 2006:521518; 2006:521511;

2005:1247855; 2005:330779; 2004:959888; 2004:236500; 2003:385603;

2002:933080; 2002:731434

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L31 ANSWER 47 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 135:201854 HCA [Full-text](#)

ED Entered STN: 20 Sep 2001

TI Redox Active Ordered Arrays via Metal Initiated Self-Assembly of Terpyridine Based Ligands

AU Diaz, Diego J.; Bernhard, Stefan; Storrier, Gregory D.; Abruna, Hector D.

CS Department of Chemistry and Chemical Biology Baker Laboratory, Cornell University, Ithaca, NY, 14853-1301, USA

SO Journal of Physical Chemistry B (2001), 105(37), 8746-8754

CODEN: JPCBPK; ISSN: 1089-5647

PB American Chemical Society

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 27, 66

AB The interfacial reaction of terpyridyl-pendant poly-amido amine (PAMAM) dendrimers (dend-n-tpy; n = 4, 8, 32) and of bis-terpyridine containing bridging ligands (tpy-bridge-tpy), dissolved in CH<sub>2</sub>Cl<sub>2</sub>, with aqueous Fe<sup>2+</sup> or Co<sup>2+</sup> gives rise to film formation on HOPG and Pt(111) single crystal surfaces. Molecularly resolved STM images reveal that these films form highly ordered 2-D trigonal arrays, which appear to be composed of one-dimensional polymeric strands with a repeat unit of (tpy-dendrimer-tpy-M)<sub>x</sub>, in the case of dendrimers, or (tpy-bridge-tpy-M)<sub>x</sub>, in the case of the bridging ligands. An extensive study with ligands of tailored architecture has been carried out, providing insight on the relationship between the ligand's mol. structure and that of the resulting films. The formation of ordered domains appears to be controlled, at least in part, by the rigidity of the mol. containing the terpyridine groups. Films derived from bridging ligands containing long chains did not give rise to observable periodic structures, whereas, rotationally hindered bridging ligands gave rise to well-ordered films. The use of optically active ligands gave rise to helical structures whose sense was dependent on the chirality of the mol. employed. The phys. extension of the

- ordered domains appears to be delimited by terrace width on the HOPG surface. The dimensions obtained from an anal. of STM images are consistent with the estimated size (from mol. modeling) of the mols. from which the films were derived. In all cases, the films are electrochem. active and exhibit a metal based reversible wave at a formal potential that corresponds to that for the resp.  $[M(tpy)_2]^{+2}$  complex.
- ST Interfacial reaction redox active ordered array metal terpyridine complex; dendrimer ligands terpyridine selfassembled layer platinum graphite
- IT Chirality  
(effect on redox active ordered arrays via metal initiated self-assembled of terpyridine based dendrimer ligands)
- IT Molecular modeling  
(estimated size of self-assembled film forming mol. of complexes with terpyridine based ligands)
- IT Cyclic voltammetry  
(of Pt electrode with films derived from interfacial reaction of dend-8-tpy/Co2+ and dend-8-tpy/Fe2+ in acetonitrile containing TBAP)
- IT Surface structure  
(of films derived from interfacial reaction of dend-8-tpy/Co2+ and dend-8-tpy/Fe2+)
- IT Formal potential  
(of films derived from interfacial reaction of dend-8-tpy/Co2+ and dend-8-tpy/Fe2+ in acetonitrile containing TBAP)
- IT Interfacial reaction  
(of terpyridyl-pendant poly-amido amine (PAMAM) dendrimers (dend-n-tpy; n = 4, 8, 32) and of bis-terpyridine containing bridging ligands (tpy-bridge-tpy), dissolved in CH2Cl2, with aqueous Fe2+ or Co2+)
- IT Polyamines  
(polyamide-, dendrimers; redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands)
- IT Dendritic polymers  
Dendritic polymers  
(polyamide-polyamines; redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands)
- IT Polyamides, properties  
(polyamine-, dendrimers; redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands)
- IT Self-assembled monolayers  
(redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands)
- IT 75-05-8, Acetonitrile, uses 1923-70-2, Tetrabutylammonium perchlorate  
(cyclic voltammetry of Pt electrode with films derived from interfacial reaction of dend-8-tpy/Co2+ and dend-8-tpy/Fe2+ in acetonitrile containing TBAP)
- IT 26937-01-9D, PAMAM, reaction products with carboxylic acid-pendant terpyridine  
(dendritic; redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands)
- IT 26937-01-9, PAMAM  
(dendritic; redox active ordered arrays via metal initiated self-assembly of terpyridine based ligands)
- IT 356522-52-6P 356522-53-7P  
(effect on redox active ordered arrays via metal initiated self-assembled of terpyridine based dendrimer ligands)
- IT 7782-42-5, Graphite, uses  
(highly oriented, pyrolytic; redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands on)

IT 75-09-2, Dichloromethane, uses  
(of terpyridyl-pendant poly-amido amine (PAMAM) dendrimers (dend-n-tpy; n = 4, 8, 32) and of bis-terpyridine containing bridging ligands (tpy-bridge-tpy), dissolved in CH<sub>2</sub>Cl<sub>2</sub>, with aqueous Fe<sup>2+</sup> or Co<sup>2+</sup>)

IT 15438-31-0, Iron 2+, reactions 22541-53-3, Cobalt 2+, reactions  
(of terpyridyl-pendant poly-amido amine (PAMAM) dendrimers (dend-n-tpy; n = 4, 8, 32) and of bis-terpyridine containing bridging ligands (tpy-bridge-tpy), dissolved in CH<sub>2</sub>Cl<sub>2</sub>, with aqueous Fe<sup>2+</sup> or Co<sup>2+</sup>)

IT 1148-79-4D, 2,2':6',2''-Terpyridine, reaction products with polyamidoamine dendrimers  
(redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands)

IT 240823-21-6P 356522-50-4P 356522-51-5P  
(redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands)

IT 7440-06-4, Platinum, uses  
(single crystal; redox active ordered arrays via metal initiated self-assembly of terpyridine based dendrimer ligands on)

OSC.G 30 THERE ARE 30 CAPLUS RECORDS THAT CITE THIS RECORD (31 CITINGS)

UPOS.G Date last citing reference entered STN: 08 Apr 2011

OS.G CAPLUS 2011:226142; 2010:1340228; 2010:714750; 2009:568027;  
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L31 ANSWER 48 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 135:143838 HCA [Full-text](#)

ED Entered STN: 23 Aug 2001

TI Viologen monolayers: Dynamics on electrode surfaces

AU Sagara, Takamasa; Tsuruta, Hiroaki; Fukuoka, Yumika; Tanaka, Saori; Nakashima, Naotoshi

CS "Organization and Function", PRESTO, JST, Japan

SO Studies in Surface Science and Catalysis (2001), 132(Proceedings of the International Conference on Colloid and Surface Science, 2000), 841-844

CODEN: SSCTDM; ISSN: 0167-2991

PB Elsevier Science B.V.

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 66

AB Dynamic processes of viologen monolayers at electrified interfaces were described for self-assembled monolayers (SAMs) of viologen-thiols on a Au electrode and the spike voltammetric response of heptylviologen on a HOPG

electrode using the results of electrochem. and electroreflectance measurements. The viologen-thiol SAM memorizes anion present while forming the SAM. The spike response of heptylviologen at a HOPG electrode was tentatively assigned as Gibbs monolayer-Langmuir monolayer phase transition.

ST viologen self assembled monolayer gold electrode dynamics; mercaptoundecylpentylviologen fluorophosphate self assembled monolayer gold electrode dynamic process

IT Self-assembled monolayers  
(cyclic voltammetry of viologen-thiol self-assembled monolayer on Au electrode in KCl solution and effect of coexisting anion in forming monolayer: viologen monolayers dynamics on electrode surfaces)

IT Anions  
(in viologen-thiol viologen-thiol self-assembled monolayer on Au electrode dynamics)

IT Formal potential  
(of pentyl(mercaptoundecyl)bipyridinium bis(hexafluorophosphate) SAM on gold electrode prepared with and without Et4NBr in KBr and in KPF6 and KF solns. in film transfer expts.)

IT Cyclic voltammetry  
(of pentyl(mercaptoundecyl)bipyridinium bis(hexafluorophosphate) SAM on gold electrode prepared with and without Et4NBr in KBr solution: viologen monolayers dynamics on electrode surfaces)

IT 7782-42-5, Graphite, uses  
(cyclic voltammetry and spike response of heptylviologen on pyrolytic graphite electrode in KBr solution: viologen monolayers dynamics on electrode surfaces)

IT 47503-76-4, Heptylviologen  
(cyclic voltammetry and spike response of heptylviologen on pyrolytic graphite electrode in KBr solution: viologen monolayers dynamics on electrode surfaces)

IT 7440-57-5, Gold, uses  
(cyclic voltammetry of viologen-thiol self-assembled monolayer on Au electrode in KCl solution and effect of coexisting anion in forming monolayer: viologen monolayers dynamics on electrode surfaces)

IT 350033-32-8  
(cyclic voltammetry of viologen-thiol self-assembled monolayer on Au electrode in KCl solution and effect of coexisting anion in forming monolayer: viologen monolayers dynamics on electrode surfaces)

IT 7758-02-3, Potassium bromide (KBr), uses 7789-23-3, Potassium fluoride (KF) 17084-13-8, Potassium hexafluorophosphate  
(formal potential of pentyl(mercaptoundecyl)bipyridinium bis(hexafluorophosphate) SAM on gold electrode prepared with and without Et4NBr in KBr and in KPF6 and KF solns. in film transfer expts.)

IT 71-91-0, Tetraethylammonium bromide  
(self-assembled monolayer formation on Au in acetonitrile containing pentyl(mercaptoundecyl)bipyridinium bis(hexafluorophosphate) and Et4NBr: viologen monolayers dynamics on electrode surfaces)

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

UPOS.G Date last citing reference entered STN: 16 Feb 2009

OS.G CAPLUS 2007:966248

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L31 ANSWER 49 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 135:113392 HCA [Full-text](#)  
ED Entered STN: 09 Aug 2001  
TI Electrochemical Origin of Hysteresis in the Electron-Transfer Reactions of Adsorbed Proteins: Contrasting Behavior of the "Blue" Copper Protein, Azurin, Adsorbed on Pyrolytic Graphite and Modified Gold Electrodes  
AU Jeuken, Lars J. C.; Armstrong, Fraser A.  
CS Inorganic Chemistry Laboratory, Oxford University, Oxford, OX1 3QR, UK  
SO Journal of Physical Chemistry B (2001), 105(22), 5271-5282  
CODEN: JPCBFK; ISSN: 1089-5647  
PB American Chemical Society  
DT Journal  
LA English  
CC 72-2 (Electrochemistry)  
Section cross-reference(s): 34, 66  
AB Azurin and other small redox proteins exhibit fast electron transfer when adsorbed on a pyrolytic graphite "edge" electrode, but close examination reveals unusual electrochem. behavior that is not predicted by simple models. Cyclic voltammetry over a wide range of scan rates (up to 1000 V s<sup>-1</sup>) shows that the apparent reduction potential depends on the scan rate and initial polarization potential, and that a small finite peak separation persists in the slowest expts. (1 mV s<sup>-1</sup>). To determine the origin of these effects, the voltammetric behavior of azurin adsorbed at PGE has been compared with results obtained using gold electrodes modified with a self-assembled monolayer (SAM) of hexanethiol or decanethiol. The contrastingly simple results that are obtained with the SAM electrodes show that the complexities stem from properties of the graphite surface or its interface with the protein. Fast scan cyclic voltammetry, initiated after prepolarizing the graphite electrode over a range of potentials, reveals that rapid electron exchange with the "blue" Cu center is perturbed by further processes that are relatively slow. Moreover, similar effects are observed for a ferredoxin that has two Fe-S clusters, each with a much more neg. reduction potential. These slow processes are responsible for the complex hysteresis behavior that is observed with the PGE electrode. Two models are proposed and compared: in the first, redox-active surface groups on the graphite surface modulate the reduction potential of the adsorbed protein. In the second model, the change in redox state of the active site is sensed by the electrode-protein interface, which adjusts to a new state.  
ST hysteresis electron transfer reaction adsorbed protein  
IT Proteins, specific or class  
(copper-containing, blue; electrochem. origin of hysteresis in electron-transfer reactions of adsorbed)  
IT Azurin (protein)  
(electrochem. origin of hysteresis in electron-transfer reactions of adsorbed)  
IT Adsorption  
Electron transfer  
Hysteresis  
(electrochem. origin of hysteresis in electron-transfer reactions of adsorbed proteins)  
IT Proteins, general, properties  
(electrochem. origin of hysteresis in electron-transfer reactions of adsorbed proteins)  
IT Chemically modified electrodes  
(electrochem. origin of hysteresis in electron-transfer reactions of



proteins adsorbed on)  
IT Self-assembled monolayers  
(electrochem. origin of hysteresis in electron-transfer reactions of  
proteins adsorbed on gold modified with)  
IT Simulation and Modeling, physicochemical  
(of proteins adsorbed on pyrolytic graphite and modified gold  
electrodes)  
IT Cyclic voltammetry  
Electric potential  
(of pyrolytic graphite and modified gold electrodes with  
adsorbed proteins in NaCl solns.)  
IT 111-31-9, Hexanethiol 143-10-2, Decanethiol  
(electrochem. origin of hysteresis in electron-transfer reactions of  
proteins adsorbed on gold modified with)  
IT 7440-57-5, Gold, uses  
(modified electrode; electrochem. origin of hysteresis in  
electron-transfer reactions of proteins adsorbed on)  
IT 7782-42-5, Graphite, uses  
(pyrolytic; electrochem. origin of hysteresis in  
electron-transfer reactions of proteins adsorbed on)  
OSC.G 57 THERE ARE 57 CAPLUS RECORDS THAT CITE THIS RECORD (58 CITINGS)  
UPOS.G Date last citing reference entered STN: 30 Aug 2011  
OS.G CAPLUS 2011:1083051; 2010:1445074; 2010:1555304; 2010:1481695;  
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L31 ANSWER 50 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 133:314903 HCA Full-text  
ED Entered STN: 16 Nov 2000  
TI Metal Ion Reactivity with 1,4-Benzenedimethanethiol Monolayers on Gold  
AU Venkataramanan, M.; Murty, K. V. G. K.; Pradeep, T.; Deepali, W.;  
Vijayamohan, K.  
CS Department of Chemistry and Regional Sophisticated Instrumentation Centre,  
Indian Institute of Technology, Madras, 600 036, India  
SO Langmuir (2000), 16(20), 7673-7678  
CODEN: LANGD5; ISSN: 0743-7463  
PB American Chemical Society  
DT Journal  
LA English  
CC 72-2 (Electrochemistry)  
Section cross-reference(s): 66, 73

AB Exposure of Cu<sup>2+</sup> ions to 1,4-benzenedimethanethiol (BDMT) monolayers on Au in solution results in the formation of copper functionalized monolayers which have been investigated in detail by surface-enhanced Raman spectroscopy (SERS), XPS, and cyclic voltammetry (CV). Upon exposure to copper ions, the free thiol groups at the surface of the monolayer disappear indicating the replacement of protons with copper ions. The reaction leads to a red shift in the C-S stretching frequency, but most of the other features are unaffected. Relative intensities of the peaks are largely the same; however, some new features are observed suggesting minor changes in the adsorbate structure that makes addnl. modes observable. Thermal stability of the monolayers has been reduced substantially as a result of reaction with metal ions, indicating that the chemical binding at the Au-monolayer interface is affected. XPS shows that copper is present at the surface. Electrochem. behavior before and after Cu<sup>2+</sup> ion adsorption is significantly different, and the adsorbed metal ions undergo reversible redox transformations. The cyclic voltammograms of the adsorbed copper ions are discussed in relation to the oxidation state changes in aqueous electrolyte solns.

ST copper ion reactivity benzenedimethanethiol monolayers gold

IT SERS (Raman scattering)  
(by 1,4-benzenedimethanethiol monolayers on gold before and after exposing to Cu<sup>2+</sup> ions)

IT Surface reaction  
(effect of Cu<sup>2+</sup> adsorption on 1,4-benzenedimethanethiol monolayers chemical binding with gold)

IT Temperature  
(effect on surface-enhanced Raman spectra of 1,4-benzenedimethanethiol monolayers on gold exposed to Cu<sup>2+</sup> ions)

IT Self-assembled monolayers  
(metal ion reactivity with 1,4-benzenedimethanethiol monolayers on gold)

IT Thermal stability  
(of 1,4-benzenedimethanethiol monolayers on gold before and after exposing to Cu<sup>2+</sup> ions)

IT Cyclic voltammetry  
(of 1,4-benzenedimethanethiol monolayers on gold before and after exposing to Cu<sup>2+</sup> ions in KCl solution)

IT Substitution reaction  
(of 1,4-benzenedimethanethiol monolayers on gold exposed to Cu<sup>2+</sup> ions)

IT Adsorption  
(of copper ions with 1,4-benzenedimethanethiol monolayers on gold from CuCl<sub>2</sub> solution)

IT 7440-57-5, Gold, uses  
(metal ion reactivity with 1,4-benzenedimethanethiol monolayers on)

IT 15158-11-9, Copper 2+, properties  
(metal ion reactivity with 1,4-benzenedimethanethiol monolayers on gold)

IT 105-09-9, 1,4-Benzenedimethanethiol  
(metal ion reactivity with 1,4-benzenedimethanethiol monolayers on gold)

IT 7447-40-7, Potassium chloride, uses  
(of 1,4-benzenedimethanethiol monolayers on gold before and after exposing to Cu<sup>2+</sup> ions in KCl solution)

IT 7447-39-4, Copper chloride, uses  
(of copper ions with 1,4-benzenedimethanethiol monolayers on gold from CuCl<sub>2</sub> solution)

OSC.G 19 THERE ARE 19 CAPLUS RECORDS THAT CITE THIS RECORD (20 CITINGS)

UPOS.G Date last citing reference entered STN: 09 Mar 2011

OS.G CAPLUS 2011:236883; 2011:251580; 2009:1586584; 2009:1570969;  
2009:1260639; 2006:976163; 2006:814906; 2006:308000; 2006:184026;  
2005:955062; 2005:610582; 2003:928599; 2003:679482; 2003:612654;

- 2003:482225; 2002:841554; 2002:422496; 2002:412887; 2001:934246  
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L31 ANSWER 51 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 133:213650 HCA [Full-text](#)

ED Entered STN: 29 Sep 2000

TI Polarized infrared study on the structure of two-dimensional nanoclusters of partially fluorinated long-chain fatty acid salts at ambient and elevated temperatures

AU Ren, Yanzhi; Iimura, Ken-ichi; Kato, Teiji

CS Satellite Venture Business Laboratory, Utsunomiya University, Utsunomiya, 321-8585, Japan

SO Journal of Chemical Physics (2000), 113(3), 1162-1169

CODEN: JCPSPA6; ISSN: 0021-9606

PB American Institute of Physics

DT Journal

LA English

CC 66-3 (Surface Chemistry and Colloids)

Section cross-reference(s): 73

AB Atomic force microscopy (AFM) images of the single monolayer of five partially fluorinated fatty acid salts [CF<sub>3</sub>(CF<sub>2</sub>)<sub>m</sub>(CH<sub>2</sub>)<sub>n</sub>COO-]2Cd2+ [(m,n)=(7,10), (7,16), (7,22), (5,22), and (3,22)] transferred from aqueous Cd2+ subphase to solid substrate revealed that the mols. had assembled into monodispersed two-dimensional clusters of tens of nanometers, whose morphol. developed systematically with (m,n). Polarized IR measurements detected a corresponding change with (m,n) in the -(CF<sub>2</sub>)-m and -(CH<sub>2</sub>)-n orientation angles. It is found that the van der Waals interaction between the C-C trans zig-zag planes of adjacent hydrocarbon segments is the driving force for the cluster formation, while the overlapping interaction between the fluorocarbon tails of neighbor salt mols. is responsible for cluster compactness. Grazing incidence reflection absorption spectra of the (m,n)=(7,10) single monolayer recorded during temperature elevation from 25 to 150°C show that heating has caused the hydrocarbon chain and the terminal C-CF<sub>3</sub> axis to be gradually randomly oriented, while the carboxylate C2 symmetry axis and the fluorocarbon long axis to realign toward the substrate normal. It is discovered that the single monolayer has thermal memory and cyclic heating-cooling treatment can render an excellent thermal stability of 120°C to the -(CH<sub>2</sub>)-10 and CF<sub>3</sub>(CF<sub>2</sub>)-7 orientations. The different thermal behavior of the corresponding five-layer Y-type LB films, reported by C. Naselli et al. (1989) was explained as due to the longitudinal interaction between the headgroups of adjacent layers.

ST fatty acid cadmium salt Langmuir Blodgett monolayer nanostructure conformation

IT Adsorbed monolayers

(Langmuir-Blodgett; polarized IR study of structure of two-dimensional nanoclusters of partially fluorinated long-chain fatty acid salts)

IT Chemical chains

Conformation

IR spectra  
Molecular orientation  
Molecular reorientation  
Nanostructures  
Packing (particle)  
Self-assembled monolayers  
Van der Waals force  
(polarized IR study of structure of two-dimensional nanoclusters of partially fluorinated long-chain fatty acid salts)

IT Fatty acids, properties  
(salts; polarized IR study of structure of two-dimensional nanoclusters of partially fluorinated long-chain fatty acid salts)

IT 121206-85-7 289714-07-4 289714-08-5 289714-09-6 289714-10-9  
(polarized IR study of structure of two-dimensional nanoclusters of partially fluorinated long-chain fatty acid salts)

OSC.G 10 THERE ARE 10 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)

UPOS.G Date last citing reference entered STN: 24 Dec 2009

OS.G CAPLUS 2009:1570991; 2007:1076732; 2004:687812; 2002:509550;  
2002:474581; 2002:67472; 2001:411433; 2001:288202; 2001:6990;  
2000:893571

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L31 ANSWER 52 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 132:128172 HCA Full-text

ED Entered STN: 25 Feb 2000

TI Convenient preparation of self-assembled monolayers derived from calix[4]resorcinarene derivatives exhibiting resistance to desorption

AU Ichimura, Kunihiro; Oh, Sang-Keun; Fujimaki, Masanori; Matsuzawa, Yoko; Nakagawa, Masaru

- CS Research Laboratory of Resources Utilization, Tokyo Institute of Technology, Yokohama, 226-8503, Japan
- SO Journal of Inclusion Phenomena and Macrocyclic Chemistry (1999), 35(1-2), 173-183  
CODEN: JIPCF5
- PB Kluwer Academic Publishers
- DT Journal
- LA English
- CC 66-4 (Surface Chemistry and Colloids)  
Section cross-reference(s): 74
- AB Crown conformers of O-carboxymethylated calix[4]resorcinarenes (CRA-CMs) bearing four perfluorooctyl- and octylazobenzene residues at the lower rim of the cyclic skeleton were synthesized to investigate the resistance to desorption of CRA-CMs forming self-assembled monolayers on aminosilylated silica substrates and the surface energy photocontrol based on E-to-Z photoisomerization of the azobenzene moiety. In comparison with CRA-CM monolayers on silica substrates, the desorption of CRA-CMs on the aminated substrate was remarkably suppressed even when CRA-CM monolayers were sonicated in polar solvents and even in water. The high desorption-resistance was attributable to multi-point adsorption of CRA-CMs through COOH/NH<sub>2</sub> interactions. UV-Vis spectral studies revealed that CRA-CM substituted with p-octylazobenzene exhibited high E-to-Z photoisomerizability up to 92% in self-assembled monolayers, while less photoisomerizability was observed for CRA-CM bearing p-perfluorooctylazobenzenes due to the steric hindrance of the larger perfluoroalkyl chains. Photoinduced changes of contact angles for water up to 8.3° were observed for a CRA-CM monolayer.
- ST calixresorcinarene deriv prepn silica self assembled monolayer photoisomerization
- IT Isomerization  
(photoisomerization; preparation of self-assembled monolayers derived from calix[4]resorcinarene derivs. exhibiting resistance to desorption)
- IT Chemisorption  
Contact angle  
Desorption  
Self-assembled monolayers  
Surface energy  
(preparation of self-assembled monolayers derived from calix[4]resorcinarene derivs. exhibiting resistance to desorption)
- IT 3179-76-8, 3-Aminopropyldiethoxymethylsilane  
(chemisorbed; preparation of self-assembled monolayers derived from calix[4]resorcinarene derivs. exhibiting resistance to desorption)
- IT 226409-60-5P 226409-61-6P  
(preparation of self-assembled monolayers derived from calix[4]resorcinarene derivs. exhibiting resistance to desorption)
- IT 104631-97-2 212915-83-8 256226-91-2  
(preparation of self-assembled monolayers derived from calix[4]resorcinarene derivs. exhibiting resistance to desorption)
- IT 256329-56-3P  
(preparation of self-assembled monolayers derived from calix[4]resorcinarene derivs. exhibiting resistance to desorption)
- IT 60676-86-0, Fused silica  
(substrates; preparation of self-assembled monolayers derived from calix[4]resorcinarene derivs. exhibiting resistance to desorption)

OSC.G 9 THERE ARE 9 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)  
UPOS.G Date last citing reference entered STN: 16 Feb 2009  
OS.G CAPLUS 2005:203721; 2003:877759; 2003:726772; 2003:7330; 2002:917673;  
2002:558391; 2002:207094; 2001:635084; 2001:368964

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L31 ANSWER 53 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 132:7004 HCA Full-text

ED Entered STN: 24 Dec 1999

TI Adsorption and Desorption of Electroactive Self-Assembled Thiolate Monolayers on Gold

AU Voicu, Raluca; Ellis, Thomas H.; Ju, Huangxian; Leech, Donal

CS Departement de Chimie, Universite de Montreal, Montreal, QC, H3C 3J7, Can.

SO Langmuir (1999), 15(23), 8170-8177

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 66

AB The influence of different chemical pretreatments on the formation and electrochem. of self-assembled mixed monolayers of 11-(ferrocenylcarbonyloxy)undecanethiol and n-decanethiol was examined using cyclic voltammetry (CV) and XPS. The hot-etched pretreated surface yields mixed monolayers with higher surface coverages of the electroactive thiol than a cold-etched surface. Probably the former surface presents a greater percentage of higher energy binding sites than the latter surface. The higher stability of these sites for the ferrocenylalkanethiolate is confirmed by desorption expts. in EtOH. The electroactive species are in dynamic adsorption/desorption equilibrium with the EtOH solution, which helps to explain a number of important properties.

ST electroactive thiolate SAM adsorption desorption electrochem gold; piranha treated gold thiolate SAM

IT Adsorption

(electrochem.; influence of different chemical pretreatments of gold on adsorption, desorption, and electrochem. of electroactive self-assembled thiolate monolayers on gold)

IT Desorption

Self-assembled monolayers

(influence of different chemical pretreatments of gold on adsorption, desorption, and electrochem. of electroactive self-assembled thiolate monolayers on gold)



IT 7440-57-5, Gold, uses 128705-31-7  
(influence of different chemical pretreatments of gold on adsorption, desorption, and electrochem. of electroactive self-assembled thiolate monolayers on gold)

IT 143-10-2, n-Decanethiol 127087-31-4,  
11-(Ferrocenylcarbonyloxy)undecanethiol  
(influence of different chemical pretreatments of gold on adsorption, desorption, and electrochem. of electroactive self-assembled thiolate monolayers on gold)

OSC.G 13 THERE ARE 13 CAPLUS RECORDS THAT CITE THIS RECORD (13 CITINGS)

UFOS.G Date last citing reference entered STN: 21 May 2010

OS.G CAPLUS 2010:596993; 2010:508626; 2009:1342726; 2009:1093118;  
2009:605487; 2008:856632; 2008:275977; 2007:781486; 2007:171216;  
2006:933747; 2006:261647; 2002:920077; 2001:893507

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L31 ANSWER 54 OF 60 HCA COPYRIGHT 2011 ACS on STN  
AN 131:149831 HCA Full-text  
ED Entered STN: 04 Sep 1999  
TI Self-Assembled Monolayers of Small  
Aromatic Disulfide and Diselenide Molecules on Polycrystalline  
Gold Films: A Comparative Study of the Geometrical Constraint Using  
Temperature-Dependent Surface-Enhanced Raman Spectroscopy, X-ray  
Photoelectron Spectroscopy, and Electrochemistry  
AU Bandopadhyay, Krisanu; Vijayamohan, K.; Venkataraman, M.; Pradeep, T.  
CS Physical/Materials Chemistry Division, National Chemical Laboratory, Pune,  
411008, India  
SO Langmuir (1999), 15(16), 5314-5322  
CODEN: LANGD5; ISSN: 0743-7463  
PB American Chemical Society  
DT Journal  
LA English  
CC 66-4 (Surface Chemistry and Colloids)  
Section cross-reference(s): 72, 73, 76  
AB A detailed investigation of the self-assembled monolayers of di-Ph disulfide  
(DDS), di-Ph diselenide (DDSe), and naphthalene disulfide (NDS) on polycryst.  
gold films using surface-enhanced Raman spectroscopy (SERS), XPS, and  
electrochem. is presented. Whereas DDS dissociatively chemisorbed on Au, in  
both DDSe and NDS, the Se-Se and S-S bonds, resp., are preserved upon  
adsorption. All of the mols. adsorb with the mol. plane perpendicular to the  
surface. Temperature-dependent SERS studies suggested that the DDS monolayer  
was by far the most stable one and was stable up to a temperature of 423 K.  
Both DDSe and NDS desorbed without breaking the diselenide and disulfide  
bonds. None of the monolayers show any structural change upon heating. XPS  
investigations show the presence of beam-induced damage upon X-ray exposure to  
DDS and NDS monolayers, and the damage is greater in the latter. Electrochem.  
investigations support the SERS and XPS data. Number of pinholes and defects  
are much less in the DDS monolayer than in NDS and DDSe. The impedance  
parameters such as double-layer capacitance, charge-transfer resistance, and  
diffusion coeffs. measured at different frequencies support the above  
conclusion. It is suggested that the geometric constraint imposed by the  
rigid naphthalene ring inhibits the cleavage of the S-S bond, and  
consequently, the adsorption sites for sulfurs are not strongly bonded. For  
DDSe, it appears that the Se-Se distance is such that appropriate binding  
sites are available, thus leading to a more ordered monolayer. For DDS, the  
facile cleavage of the S-S bond leads to strong binding of the adsorbate mols.  
at the preferred surface sites, resulting in a rather well-ordered self-  
assembled structure.  
ST SAM gold modified electrode disulfide diselenide SERS XPS CV  
IT Surface defects  
(Number of pinholes and defects in self-assembled  
monolayers of small aromatic disulfide and diselenide  
mols. on polycryst. gold films)  
IT Electric current-potential relationship  
(cyclic voltammogram in acetonitrile containing iron redox system  
to study bare gold and modified gold electrodes)  
IT Dissociative chemisorption  
(dissociatively chemisorption of di-Ph disulfide on polycryst. gold  
films)  
IT Adsorption  
Self-assembled monolayers  
(investigation of self-assembled monolayers  
of di-Ph disulfide, di-Ph diselenide, and naphthalene disulfide on  
polycryst. gold films using SERS, XPS and cycling  
voltammetry)

IT Description  
(of di-Ph diselenide, and naphthalene disulfide without breaking diselenide and disulfide bonds)

IT Chemically modified electrodes  
Electric impedance  
(plot of real part of faradaic impedance in aqueous KF solution for di-Ph disulfide, di-Ph diselenide, and naphthalene disulfide modified Au electrodes)

IT 7789-23-3, Potassium fluoride  
(cyclic voltammogram in acetonitrile containing iron redox system to study bare gold and modified gold electrodes)

IT 75-05-8, Acetonitrile, uses  
(cyclic voltammogram in acetonitrile containing iron redox system to study bare gold and modified gold electrodes)

IT 13408-62-3 13408-63-4  
(cyclic voltammogram in acetonitrile containing iron redox system to study bare gold and modified gold electrodes)

IT 209-22-3, Naphtho[1,8-cd]-1,2-dithiole 882-33-7, Diphenyl disulfide 1666-13-3, Diphenyl diselenide  
(investigation of self-assembled monolayers of di-Ph disulfide, di-Ph diselenide, and naphthalene disulfide on polycryst. gold films using SERS, XPS and cycling voltammetry)

IT 7440-57-5, Gold, properties  
(polycryst. films; investigation of self-assembled monolayers of di-Ph disulfide, di-Ph diselenide, and naphthalene disulfide on polycryst. gold films using SERS, XPS and cycling voltammetry)

OSC.G 77 THERE ARE 77 CAPLUS RECORDS THAT CITE THIS RECORD (80 CITINGS)

UPOS.G Date last citing reference entered STN: 15 Dec 2010

OS.G CAPLUS 2010:1527351; 2010:1340212; 2010:719255; 2010:551903; 2010:127751; 2010:127098; 2010:69306; 2009:810971; 2009:963119; 2009:779243; 2008:1079405; 2008:859310; 2008:652100; 2008:549641; 2008:549398; 2008:310674; 2008:23202; 2007:1342793; 2007:1342781; 2007:822721; 2007:713469; 2007:709166; 2007:683564; 2007:671396; 2007:490065; 2007:414923; 2007:203443; 2007:130993; 2006:1346169; 2006:1320109; 2006:907856; 2006:509724; 2006:398586; 2005:1226945; 2005:1226920; 2005:1179572; 2005:1112989; 2005:955062; 2005:708268; 2005:702445; 2005:655364; 2005:573850; 2005:538765; 2005:162482; 2005:113453; 2004:1011836; 2004:956588; 2004:944086; 2004:745973; 2004:559544

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L31 ANSWER 55 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 130:213976 HCA [Full-text](#)

ED Entered STN: 10 Apr 1999

TI Molecular Dynamics Simulation of Benzenethiolate and Benzyl Mercaptide on Au(111)

AU Jung, Hun Huy; Won, Young Do; Shin, Seokmin; Kim, Kwan

CS Department of Chemistry and Center for Molecular Catalysis, Seoul National University, Seoul, 151-742, S. Korea

SO Langmuir (1999), 15(4), 1147-1154

CODEN: LANGD5; ISSN: 0743-7463

PB American Chemical Society

DT Journal

LA English

CC 66-3 (Surface Chemistry and Colloids)

Section cross-reference(s): 65

AB The results of theor. studies on the self-assembled monolayers of benzenethiolate (BT) and benzyl mercaptide (BZM) on a Au(111) surface were presented. A few relevant potential energy parameters were determined. Annealing type mol. dynamics simulations where the minimized initial configurations are heated to 1000 K and then cooled to room temperature, assuming two types of unit cells:  $\sqrt{3}\times\sqrt{3}R30^\circ$  and 2x2 were performed. The results of the simulations showed that BZM formed a nearly perfect herringbone structure, while the apparent herringbone type structure of BT was somewhat disordered in the  $\sqrt{3}\times\sqrt{3}R30^\circ$  unit cell. For the 2x2 unit cell with larger area per mol., both monolayers did not form well-ordered structures, but the BZM

showed some local ordering with herringbone structure. In both cases, the mols. of BZM are found to be nearly vertical to the surface, while those of BT are tilted from the surface normal. All these theor. results are consistent with recent exptl. findings. The role of a flexible methylene unit near the sulfur headgroup in discriminating stable packing structures of the self-assembled monolayers is discussed.

ST gold self assembled monolayers arom  
thiol mol dynamics simulation  
IT Thiols (organic), properties  
Thiols (organic), properties  
(aryl; annealing type mol. dynamics simulation of  
benzenethiolate and benzyl mercaptide on Au(111))  
IT Adsorbed substances  
Molecular orientation  
Self-assembled monolayers  
Surface structure  
(effect of aromatic thiol headgroups on packing structures of  
self-assembled monolayers on Au(111)  
studied by mol. dynamics simulation)  
IT Potential energy  
(mol. dynamics simulation of interaction between aromatic thiol  
headgroups during self-assembly on Au(111) surface)  
IT Simulation and Modeling, physicochemical  
(mol. dynamics; annealing type mol. dynamics simulation of  
benzenethiolate and benzyl mercaptide on Au(111))  
IT Phenols, properties  
Phenols, properties  
(thiophenols; annealing type mol. dynamics simulation of  
benzenethiolate and benzyl mercaptide on Au(111))  
IT 1492-49-5, Benzenemethanethiol, ion(1-) 13133-62-5, Benzenethiolate,  
properties  
(annealing type mol. dynamics simulation of benzenethiolate and benzyl  
mercaptide on Au(111))  
IT 7440-57-5, Gold, properties  
(effect of aromatic thiol headgroups on packing structures of  
self-assembled monolayers on Au(111)  
studied by mol. dynamics simulation)  
OSC.G 76 THERE ARE 76 CAPLUS RECORDS THAT CITE THIS RECORD (76 CITINGS)  
UPOS.G Date last citing reference entered STN: 15 Aug 2011  
OS.G CAPLUS 2011:951374; 2011:304847; 2010:501749; 2009:1586786;  
2009:1184243; 2009:337278; 2008:1347674; 2008:1294064;  
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2007:1203773; 2007:1167996; 2007:1055823; 2007:902116;  
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L31 ANSWER 56 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 130:188401 HCA [Full-text](#)

ED Entered STN: 27 Mar 1999

TI Self-assembled monolayers on electrode  
surfaces: a probe for redox kinetics

AU Berchmans, Sheela; Yegnamaran, Venkatraman; Rao, Gollakota Prabhakara  
CS Central Electrochemical Research Institute, Karaikudi, 630 006, India

SO Journal of Solid State Electrochemistry (1998), 3(1), 52-54

CODEN: JSSEFS; ISSN: 1432-8488

PB Springer-Verlag

DT Journal

LA English

CC 72-2 (Electrochemistry)

Section cross-reference(s): 66, 67

AB The formation and characterization of self-assembled monolayers of organosulfur compds. like alkanethiols and dialkyl (di)sulfides on metal surfaces such as gold are areas of current research interest. The presence of an aromatic ring in a thiol mol. can enhance the binding between Au and the thiol, giving compact and impervious self-assembled monolayers. The formation of a monolayer of 2-mercaptobenzothiazole (MBT), containing an aromatic group with a fused thiazole ring but no long alkyl chain, is achieved on a gold electrode surface. Voltammetric studies of ferro/ferricyanide and ferrous/ferric redox systems carried out on this Au|MBT electrode are reported. Further, the possibility of using such an Au|MBT electrode to distinguish between inner and outer sphere electron transfer reactions is indicated.

ST self assembled monolayer electrode  
surface probe redox kinetics; mercaptobenzothiazole self  
assembled monolayer gold electrode redox kinetics;  
octadecyl mercaptan mercaptobenzothiazole monolayer gold electrode redox  
kinetics; cyanoferrate redox kinetics self assembled  
monolayer gold electrode; iron redox kinetics self  
assembled monolayer gold electrode

IT Electron transfer  
(adsorbed aromatic thiol monolayers on electrodes in  
distinguishing between inner and outer sphere electron transfer)

IT Thiols (organic), uses  
Thiols (organic), uses  
(aryl; adsorbed monolayers on electrodes in distinguishing  
between inner and outer sphere electron transfer)

IT Redox reaction  
Redox reaction kinetics  
(electrochem.; of Fe<sup>2+</sup>/Fe<sup>3+</sup> and cyanoferrates on self-  
assembled monolayers from octadecyl mercaptan and  
from mercaptobenzothiazole on gold electrode in sulfuric acid solns.)

IT Adsorbed monolayers  
(octadecyl mercaptan and mercaptobenzothiazole on gold electrode in  
study electrochem. redox reaction kinetics)

IT Cyclic voltammetry  
(of gold electrodes modified with mercaptobenzothiazole or octadecyl  
mercaptan in sulfuric acid solution containing ferrous ammonium sulfate or  
potassium ferrocyanide)

IT Self-assembled monolayers  
(on electrode surfaces: probe for redox kinetics)

IT Electrodes  
(self-assembled monolayers on electrode  
surfaces: probe for redox kinetics)

IT Phenols, uses  
Phenols, uses  
(thiophenols; adsorbed monolayers on electrodes in distinguishing  
between inner and outer sphere electron transfer)

IT 10045-89-3, Ferrous ammonium sulfate 13943-58-3, Potassium ferrocyanide  
(cyclic voltammetry of gold electrodes modified with  
mercaptobenzothiazole or octadecyl mercaptan in sulfuric acid solution  
containing ferrous ammonium sulfate or potassium ferrocyanide)

IT 7664-93-9, Sulfuric acid, properties  
(electrochem. redox reaction kinetics of Fe<sup>2+</sup>/Fe<sup>3+</sup> and cyanoferrates on  
self-assembled monolayers from octadecyl  
mercaptan and from mercaptobenzothiazole on gold electrode in sulfuric  
acid solns.)

IT 7439-89-6, Iron, properties 13408-62-3, Ferricyanide 13408-63-4,  
Ferrocyanide  
(electrochem. redox reaction kinetics on self-  
assembled monolayers from octadecyl mercaptan and  
from mercaptobenzothiazole on gold electrode in sulfuric acid solns.)

IT 2885-00-9, Octadecyl mercaptan 7440-57-5, Gold, uses  
(self-assembled monolayers from octadecyl  
mercaptan and from mercaptobenzothiazole on gold electrode  
surfaces: probe for redox kinetics)

IT 149-30-4, 2-Mercaptobenzothiazole  
(self-assembled monolayers on gold  
electrode surfaces: probe for redox kinetics)

OSC.G 11 THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)

UPOS.G Date last citing reference entered STN: 16 Feb 2009

OS.G CAPLUS 2008:24206; 2007:766705; 2006:395114; 2004:575168; 2004:220891;  
2004:4559; 2003:897111; 2002:908591; 2002:567720; 2002:558393;  
2000:214037

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L31 ANSWER 57 OF 60 HCA COPYRIGHT 2011 ACS on STN  
 AN 130:173479 HCA Full-text  
 ED Entered STN: 20 Mar 1999  
 TI "Rotoball": a strategy for preparing defect-minimized fullerene monolayers  
 AU Caldwell, W. Brett; Mirkin, Chad A.  
 CS Chemistry Department, Northwestern University, Evanston, IL, 60208-3113, USA  
 SO Springer Series in Materials Science (1998), 33(Supercarbon), 177-186  
 CODEN: SSMSE2; ISSN: 0933-033X  
 PB Springer-Verlag  
 DT Journal  
 LA English  
 CC 66-4 (Surface Chemistry and Colloids)  
 AB Rotoball, a surface-confined piperazine adduct of C60, was prepared and studied as a Langmuir-Blodgett film on gold substrate. A combination of 2D NMR techniques was used to determine that the piperazine group is fused to the fullerene and locked into a boat structure with an alc. group at one of the axial positions. This novel compound was designed to have amphiphilic character and maximize fullerene-fullerene interactions when incorporated in a monolayer structure.  
 ST fullerene piperazine ring fused rotoball prep  
 monolayer; Langmuir Blodgett monolayer piperazine fullerene rotoball; amphiphilicity piperazine fullerene rotoball self assembled monolayer  
 IT Fullerenes  
 (hydroxymethylpiperazine-containing; preparation of defect-minimized amphiphilic  
 fullerene self-assembled monolayer by  
 fusing of hydroxymethylpiperazine group)  
 IT Amphiphiles  
 Langmuir-Blodgett films  
 Molecular structure  
 Self-assembled monolayers  
 (preparation of defect-minimized amphiphilic fullerene self-assembled monolayer by fusing of  
 hydroxymethylpiperazine group)  
 IT 183205-52-9P  
 (preparation of defect-minimized amphiphilic fullerene self-assembled monolayer by fusing of



hydroxymethylpiperazine group)

IT 28795-50-8, 2-(Hydroxymethyl)piperazine 99685-96-8, C60 Fullerene (preparation of defect-minimized amphiphilic fullerene self-assembled monolayer by fusing of hydroxymethylpiperazine group)

IT 7440-57-5, Gold, uses (substrate; preparation of defect-minimized amphiphilic fullerene self-assembled monolayer by fusing of hydroxymethylpiperazine group)

OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (2 CITINGS)

UPOS.G Date last citing reference entered STN: 16 Feb 2009

OS.G CAPLUS 2008:1365254; 2007:1264515

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L31 ANSWER 58 OF 60 HCA COPYRIGHT 2011 ACS on STN

AN 128:252279 HCA Full-text

OREF 128:49785a,49788a

ED Entered STN: 12 May 1998

TI Surface acoustic wave chemical sensor arrays: new chemically sensitive interfaces combined with novel cluster analysis to detect volatile organic compounds and mixtures

AU Ricco, Antonio J.; Crooks, Richard M.; Osbourn, Gordon C.

CS Microsensor RD and Vision Science, Sandia National Laboratories, Albuquerque, NM, 87185-1425, USA

SO Accounts of Chemical Research (1998), 31(5), 289-296

CODEN: ACHRE4; ISSN: 0001-4842

PB American Chemical Society

DT Journal; General Review

LA English

CC 80-0 (Organic Analytical Chemistry)

Section cross-reference(s): 66, 76

AB A review with 27 refs. The authors focus in this Account on chemical sensor arrays as a means to obviate the difficult, costly process of developing a new material with high chemical specificity for each analyte: one array can provide distinct responses for tens of chems. and mixts. The authors emphasize that many of the subsections of this Account are, to varying degree, "platform independent", so that arrays of optical fibers, electrochem. sensors, chemiresistors, metal oxides, or thermal devices can be conceptually

substituted for the SAW platforms that the authors discuss in detail. The moderate selectivity requirements for arrays allow consideration of a much wider range of materials—everything from common organic polymers to porous ceramics—than for molecularly specific sensors. Furthermore, arrays retain some of the "passive sampling" features of discrete sensors that  $\mu$ -TAS must relinquish due to its reliance upon addition of reagents, pumping, mixing, and the like.

- ST SAW sensor array org volatile review; interface SAW sensor org volatile review; cluster analysis SAW org volatile review
- IT Surface acoustic wave sensors  
(arrays; surface acoustic wave chemical sensor arrays: new chemical sensitive interfaces combined with novel cluster anal. to detect volatile organic compds. and mixts.)
- IT Hydrocarbons, analysis  
(chloro, volatile; surface acoustic wave chemical sensor arrays: new chemical sensitive interfaces combined with novel cluster anal. to detect volatile organic compds. and mixts.)
- IT Self-assembled monolayers  
(for surface acoustic wave chemical sensor arrays combined with novel cluster anal. to detect volatile organic compds. and mixts.)
- IT Films  
(plasma processed; for surface acoustic wave chemical sensor arrays combined with novel cluster anal. to detect volatile organic compds. and mixts.)
- IT Cluster analysis  
(surface acoustic wave chemical sensor arrays: new chemical sensitive interfaces combined with novel cluster anal. to detect volatile organic compds. and mixts.)
- IT Volatile organic compounds  
(surface acoustic wave chemical sensor arrays: new chemical sensitive interfaces combined with novel cluster anal. to detect volatile organic compds. and mixts.)
- IT Alcohols, analysis  
Aromatic hydrocarbons, analysis  
Hydrocarbons, analysis  
Ketones, analysis  
(volatile; surface acoustic wave chemical sensor arrays: new chemical sensitive interfaces combined with novel cluster anal. to detect volatile organic compds. and mixts.)
- IT 7723-14-0D, Phosphorus, organic compds., analysis  
(volatile; surface acoustic wave chemical sensor arrays: new chemical sensitive interfaces combined with novel cluster anal. to detect volatile organic compds. and mixts.)
- OSC.G 87 THERE ARE 87 CAPLUS RECORDS THAT CITE THIS RECORD (87 CITINGS)
- UPOS.G Date last citing reference entered STN: 07 Mar 2011
- OS.G CAPLUS 2011:251481; 2010:762048; 2010:515026; 2010:93722; 2010:177361; 2009:661854; 2008:1075522; 2008:633863; 2008:102159; 2008:97380; 2008:63264; 2008:532; 2007:1428767; 2007:1363452; 2007:1277320; 2007:1077964; 2006:1293464; 2006:1106097; 2006:912258; 2006:803917; 2006:139513; 2006:92829; 2005:1323355; 2005:799846; 2005:699979; 2005:526660; 2005:520681; 2005:128416; 2004:1063094; 2004:889458; 2004:785121; 2004:509624; 2004:392101; 2004:318754; 2004:178947; 2004:55839; 2003:818055; 2003:776469; 2003:684194; 2003:569794; 2003:170569; 2003:168088; 2003:120363; 2003:101156; 2003:74893; 2002:450486; 2002:215110; 2002:184782; 2002:116425; 2002:67382
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ED Entered STN: 25 Nov 1995

TI Scanning probe lithography. 2. Selective chemical vapor

deposition of copper into scanning tunneling microscope-defined patterns

AU Schoer, J. K.; Ross, C. B.; Crooks, R. M.; Corbitt, T. S.; Hampden-Smith, M. J.

CS Dept. Chem., New Mexico Univ., Albuquerque, NM, USA

SO Report (1993), Rept. No. TR-12; Order No. AD-A273304, 22 pp.

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DT Report

LA English

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 66

AB A scanning tunneling microscope (STM) has been used to define features having critical dimensions 0.05-5.0  $\mu\text{m}$  within a self-assembled monolayer resist of octadecylmercaptan confined to a Au(111) surface. Low-temperature chemical vapor deposition methods were used to metalize the STM-patterned surface with Cu. At substrate temps. near 120°C, the precursor hexafluoroacetylacetonatocopper(I) (1,5-cyclooctadiene) disproportionates to deposit Cu on the STM-etched portion of the substrate, but not on the unetched methyl-terminated monolayer resist surface. At substrate temps. significantly above 120°C the degree of selectivity is reduced, probably as a result of thermal desorption of the organomercaptan monolayer.

ST copper CVD STM lithog pattern; octadecylmercaptan resist copper

CVD STM lithog; mercaptan monolayer resist copper CVD

IT Etching

Vapor deposition processes

- (selective CVD of copper into STM-defined patterns in octadecylmercaptan monolayers on gold)
- IT Lithography  
(micron, selective CVD of copper into STM-defined patterns in octadecylmercaptan monolayers on gold)
- IT Adsorbed substances  
(monolayer, selective CVD of copper into STM-defined patterns in octadecylmercaptan monolayers on gold)
- IT 2885-00-9, Octadecylmercaptan  
(resist; selective CVD of copper into STM-defined patterns in octadecylmercaptan monolayers on gold)
- IT 7440-50-8, Copper, processes  
(selective CVD of copper into STM-defined patterns in octadecylmercaptan monolayers on gold)
- L31 ANSWER 60 OF 60 HCA COPYRIGHT 2011 ACS on STN
- AN 120:231703 HCA [Full-text](#)
- OREF 120:40813a,40816a
- ED Entered STN: 30 Apr 1994
- TI Scanning Probe Lithography. 2. Selective Chemical Vapor Deposition of Copper into Scanning Tunneling Microscope-Defined Patterns
- AU Schoer, Jonathan K.; Ross, Claudia B.; Crooks, Richard M.; Corbitt, Thomas S.; Hampden-Smith, Mark J.
- CS Department of Chemistry, Texas A and M University, College Station, TX, 77843-3255, USA
- SO Langmuir (1994), 10(3), 615-18
- CODEN: LANGD5; ISSN: 0743-7463
- DT Journal
- LA English
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- AB A scanning tunneling microscope (STM) has been used to define features having critical dimensions ranging from 0.05 to 5.0  $\mu\text{m}$  within a self-assembled monolayer resist of octadecyl mercaptan, HS(CH<sub>2</sub>)<sub>17</sub>CH<sub>3</sub>, confined to a Au(111) surface. Low temperature chemical vapor deposition (CVD) methods were used to metalize the STM-patterned surface with Cu. At substrate temps. near 120 °, the Cu CVD precursor, hexafluoroacetylacetonatocopper(I)-(1,5-cyclooctadiene), disproportionates to deposit Cu on the STM-etched portion of the substrate, but not on the unetched methyl-terminated monolayer resist surface. At substrate temperature significantly above 120 ° the degree of selectivity is reduced, probably as a result of thermal desorption of the organomercaptan monolayer.
- ST octadecyl mercaptan resist copper vapor deposition; electron microscope lithog octadecyl mercaptan metalization
- IT Vapor deposition processes  
(of copper from complex precursor, on gold, in scanning tunneling microscope lithog.)
- IT Microscopes  
(electron tunneling, scanning, lithog. by, of self-assembled monolayer resist of octadecyl mercaptan on gold, vapor deposition of copper in)
- IT Resists  
(electron-beam, self-assembled monolayer of octadecyl mercaptan on gold as, STM patterning and vapor deposition of copper on)
- IT 86233-74-1  
(chemical vapor deposition of copper by from precursor of, in lithog. using STM patterning of gold surface)
- IT 7440-50-8, Copper, uses  
(chemical vapor deposition of, on gold surface, patterned by STM)

lithog.)  
IT 7440-57-5, Gold, uses  
(resists from self-assembled monolayer of  
alkanethiol on gold, STM imaging and vapor deposition of copper on)  
IT 2885-00-9, Octadecyl mercaptan  
(resists from self-assembled monolayer  
of, on gold, STM imaging and vapor deposition of copper on)  
OSC.G 54 THERE ARE 54 CAPLUS RECORDS THAT CITE THIS RECORD (54 CITINGS)  
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1997:493720; 1997:353428; 1997:351115; 1997:298471; 1997:207714